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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Vol. 87, No. 4 APRIL, 1934 Member A.B.C. — A.B.P.

A High Pressure Stream Being Used on the Department Store Conflagration at Birmingham, Ala. The Building is Located in the Center of the High Value District.

CENTRAL STATION SPRINKLER SUPERVISORY SERVICE PROVIDES **11** ***point*** PROTECTION

...IN ADDITION to summoning the fire department by automatically transmitting a speedy and accurate alarm when water flows from the sprinkler system, A.D.T. Sprinkler Supervisory Service includes ten other important safeguards:

It automatically reports...

1. Opening or closing of shut-off valves;
2. High or low air pressure in dry pipe systems;
3. High or low water in gravity tanks;
4. Low temperature in gravity tanks;
5. High or low air pressure in pressure tanks;
6. High or low water in pressure tanks;
7. Power supply to fire pumps cut off.
8. All electrical circuits are under the constant supervision of the Central Station.
9. A.D.T. assumes full responsibility for the inspection and maintenance of the entire supervisory system.
10. Every alarm is investigated immediately by Central Station operatives and is closely followed up until normal conditions are restored.

94,230 sprinkler waterflow and supervisory signals were received in A.D.T. Central Stations during 1933... all indicated conditions requiring immediate correction and were speedily and effectively acted upon.

This 11 point protection, supplied only by A.D.T. Service, assures instant automatic reporting of fires and that sprinkler systems receive the care and attention necessary for successful operation. We shall be glad to send you descriptive literature.

A.D.T. SYSTEM

CONTROLLED COMPANIES OF

AMERICAN DISTRICT TELEGRAPH COMPANY

155 SIXTH AVENUE · NEW YORK N.Y.

A NATION-WIDE PROTECTION SERVICE

It will help if you will mention FIRE ENGINEERING *when writing advertisers*

A copy of this cartoon, autographed by Ed Wynn, the Texaco Fire Chief, will be sent to you with the compliments of The Texas Company, makers of Texaco Fire Chief Gasoline. Please address your request to The Texas Company, Room 1805, 135 East 42nd Street, New York, N. Y. Be sure to indicate the room number.

A Consolidation of FIRE AND WATER ENGINEERING *and* THE FIRE ENGINEER

FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

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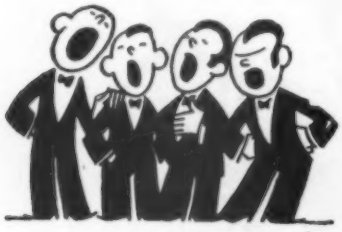

Everybody's Happy

REALIZING that the average fire fighter has a good sense of humor, the Texas Company, makers of the famous Fire Chief Gasoline, are featuring a series of cartoons in their FIRE ENGINEERING advertising with an offer to send special copies autographed by Ed. Wynn and suitable for framing.

• "The response thus far has been highly gratifying," Texaco's advertising department told us a few days ago. "We have already received more than 500 requests for the first of the series and they keep coming in right along. We still have a supply of the cartoons which we shall gladly mail without charge to anybody in the fire service who wants one."

• It pleases us, for one thing, to see our readers get the advantage of such a generous offer. Quite naturally, we are mighty happy, too, to have this further sound evidence of FIRE ENGINEERING's effectiveness as an advertising medium.

The Publishers

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Associated Business Papers

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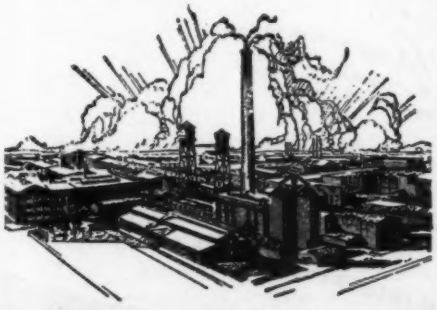
Sole manufacturers of Radio-Active-Treated Mildew-proof
FIRE HOSE



—a high quality, long age-resisting hose.
—every length inspected and tested.
—every length designed for maximum pressure.
—the absolute reliability of Manhattan Fire Hose is a matter of record dating back over 40 years.
—when you order replacements, specify Manhattan Fire Hose.

THE MANHATTAN RUBBER MFG. DIVISION
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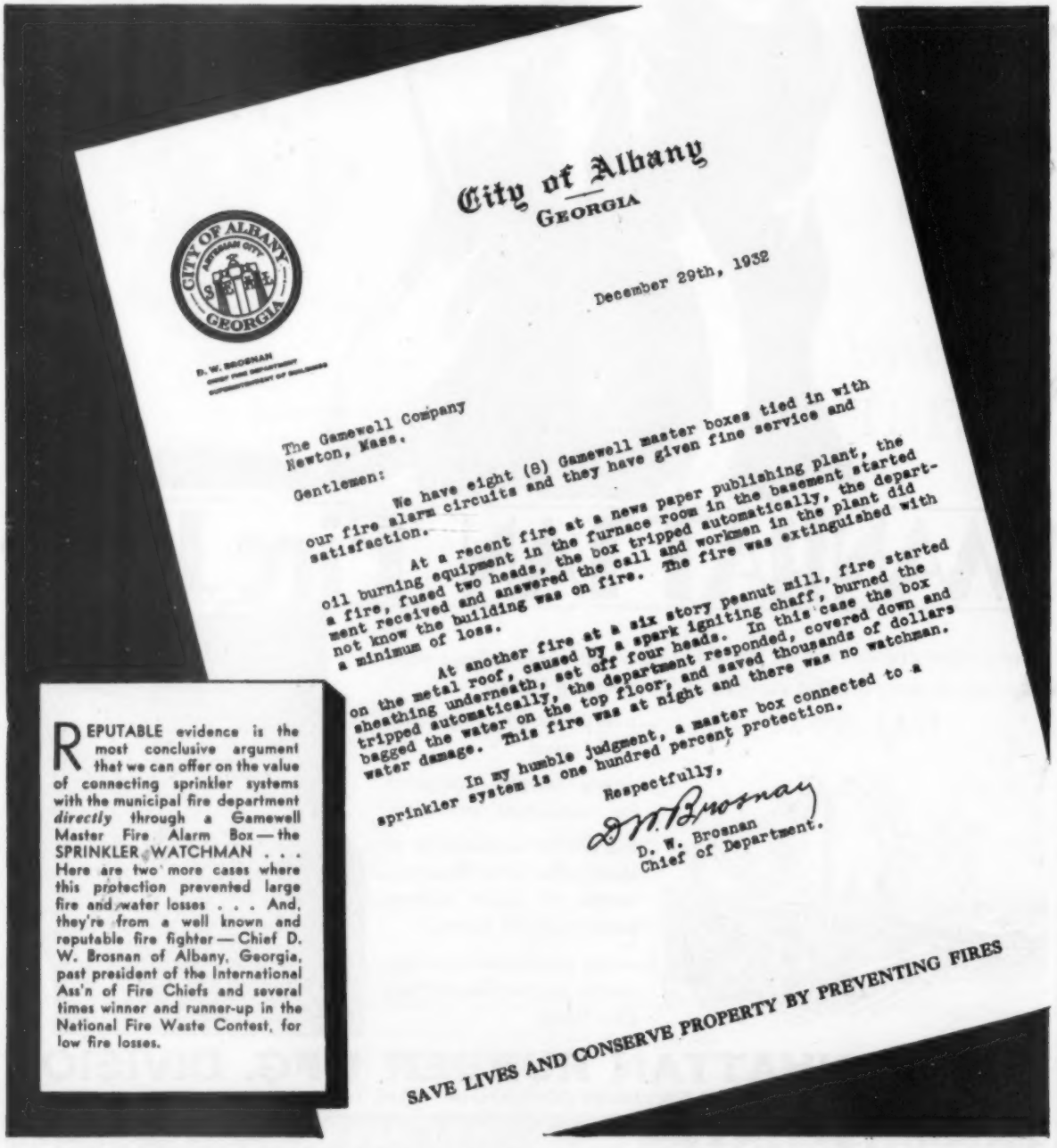
We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

INSTANT ALARM!

***Chief Brosnan cites 2 more cases proving the value of* CONNECTING SPRINKLER SYSTEMS *to* MASTER FIRE ALARM BOXES . . . .**



City of Albany
GEORGIA

December 29th, 1932

D. W. BROSNAN
CHIEF FIRE DEPARTMENT
SUPERINTENDENT OF BUILDINGS

The Gamewell Company
Newton, Mass.

Gentlemen:

We have eight (8) Gamewell master boxes tied in with our fire alarm circuits and they have given fine service and satisfaction.

At a recent fire at a news paper publishing plant, the oil burning equipment in the furnace room in the basement started a fire, fused two heads, the box tripped automatically, the department received and answered the call and workmen in the plant did not know the building was on fire. The fire was extinguished with a minimum of loss.

At another fire at a six story peanut mill, fire started on the metal roof, caused by a spark igniting chaff, burned the sheathing underneath, set off four heads. In this case the box tripped automatically, the department responded, covered down and bagged the water on the top floor, and saved thousands of dollars water damage. This fire was at night and there was no watchman.

In my humble judgment, a master box connected to a sprinkler system is one hundred percent protection.

Respectfully,

D. W. Brosnan
Chief of Department.

REPUTABLE evidence is the most conclusive argument that we can offer on the value of connecting sprinkler systems with the municipal fire department *directly* through a Gamewell Master Fire Alarm Box — the SPRINKLER WATCHMAN . . . Here are two more cases where this protection prevented large fire and water losses . . . And, they're from a well known and reputable fire fighter — Chief D. W. Brosnan of Albany, Georgia, past president of the International Ass'n of Fire Chiefs and several times winner and runner-up in the National Fire Waste Contest, for low fire losses.

SAVE LIVES AND CONSERVE PROPERTY BY PREVENTING FIRES

THE GAMEWELL COMPANY
NEWTON, MASSACHUSETTS

FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 87 APRIL, 1934 Number 4

With the Editor

Publicity Pays

Financial distress of cities has proven a most effective excuse for newly elected administrations to discharge or demote Fire Chiefs. In these times of stress, few question the motives behind political moves. Everything done is assumed to be done for the good of the city, for few would be inclined to believe that political maneuvers would take precedence over justified changes.

No matter how faithful the service rendered; no matter what the length of service; no matter what reduction of annual fire loss has been accomplished, heads of departments have been removed—unless they worked for the election of the incoming officials.

There has been quite an epidemic of such removals during the past three months, among the victims being even such men as Chief Richard Lee Smith, of Pittsburgh, last year's President of the International Association of Fire Chiefs. All parts of the country have been affected, with the possible exception of the Pacific Coast States.

Unless the Chief is a Civil Service appointee, removable only after trial on reasonable charges, there is no sure protection against unjust removal. Public opinion, however, is very helpful in many cases in thwarting unscrupulous politicians. But public opinion must be cultivated. Fundamentally it is based on performance, but developed through publicity.

When the head of a Fire Department, for example, institutes salvage work, that is performance. Keeping the public, including the influential business leaders, posted in just what salvage work accomplishes is publicity—and publicity of a healthy sort. If fire losses are reduced, the public wants to know it; and credit will be given the Chief for the good work.

Building up a background of good will for the department and its officers is like planting a windbreak. Its effects are cumulative. Thoughts, like small trees, are planted day by day. They take root and grow in importance as time passes and eventually form a bulwark of safety when the storm breaks.

The Chief who keeps his accomplishments to himself is like a clock without hands. He does his work faithfully, unfalteringly, but he is the only one who knows it. Proper education of the public is a valuable asset, particularly in these changing times.

Fred Sheppard

Fire Prevention in New York City

By PETER C. SPENCE,
Chief Division of Fire Prevention,
New York Fire Department

Chief Peter C. Spence

FIRE is the most dreaded word in our language. The greatest disasters recorded in history began with a fire. Nero and the burning of Rome. Fire ravaged London for four days in 1666. Chicago suffered from it in 1871, and 100,000 people were made homeless. San Francisco had a terrible experience—an earthquake and fire—the worst in American cities. The City Hall was completely wrecked. The Grand Opera House and other theatres fell to pieces or were consumed by flames. Loss of life reached 1,000 and the property was damaged 250 million dollars' worth. The earthquake destroyed the water supply and left the city at the mercy of the flames. Earthquakes caused the fire on Tokyo in 1923. The houses were constructed of wood with paper walls and a heavy thatch of straw. From 60,000 to 70,000 people were killed; 25 square miles were burned and over 100,000 persons were driven away.

In England the fire losses are over £12,000,000 annually. In the United States, because wooden and frame houses are more common than in Europe, the losses are over half a billion dollars annually, or approximately five dollars per person.

In 1835 a fire in this city burned 530 buildings, 1,000 mercantile firms lost their places of business, the area burned covered 52 acres, and the loss was 15 million dollars. Ten years later another fire destroyed 300 buildings, 35 deaths occurred and the property damage was seven and a half million dollars.

Conditions That Cause Conflagrations

These were conflagrations. A conflagration is a development of a small fire under supporting conditions. A strong wind, scarcity of water, lack of fire fighting apparatus, defective or combustible construction—all contribute. Even in the absence of natural wind, a large fire produces a disturbance of the atmosphere sufficient to move a super-heated cloud of air and produce air currents which set on fire all that is combustible in its wake. For instance, in the Atlanta conflagration, the second house to ignite was a mile from the original outbreak; the next was a mile off in another direction; and the fourth building to catch on fire was in between. These different blazes united, and spreading over a burned area destroyed hundreds of houses, wiped out the savings of thousand and resulted in many deaths and untold misery.

No outline of fire prevention activity is complete without mentioning the fire of the Triangle Waist Company in the Asch Building in 1911, where 147 lives were lost. The agitation following this loss of life influenced the State Legislature to appoint a Factory Investigating Commission that took testimony and studied the hazards in factories to which workers are exposed, and enacted legislation known as the Labor Law.

Fire Prevention Laws

The Labor Law requires two protected exits for factory workers, interior fire alarms and fire drill, doors opening out, sprinkler protection under certain conditions, and what is termed the Philadelphia fire tower in high buildings, as well as fire resisting and fireproof construction. The result of these laws is that loss of life in factories due to exits and their protection has been reduced to nil. The Hoey Law of 1911 created a Bureau of Fire Prevention in the Fire Department. The purpose was to centralize responsibility for the enforcement of laws relating to Fire Prevention.

By the enactment of Chapter 503 in 1916, the jurisdiction and enforcement of laws (including the Labor Law) relating to the construction, occupancy and use of buildings, was relegated to New York City departments. The Board of Standards and Appeals was created to make, amend and repeal rules for carrying into effect the provisions of ordinances relating to the construction of buildings. This makes for flexibility in the application of laws and encourages advancement in the development of materials and methods of construction.

Fires in 1932

During 1932 there occurred 31,223 fires; 18,908 were in buildings, 142 in vessels, and 12,173 were classed as miscellaneous. This is an average of over 85 fires per day, 365 days of the year. Of greater and more serious concern were the fatalities—117 deaths in the greater city. A much greater number were injured, causing death, and the uniformed fire-fighting force suffered injuries and deaths. Of these fatalities, 74 occurred in tenements or multiple dwellings; 25 were in residences; 2 in public and private garages; 6 in furnished room houses; 4 in sheds, and the balance in miscellaneous occupancies.

New York City covers 201,446 acres, or 315 square miles. It has a population of over 7,000,000, a total of 663,784 buildings. The loss in property for 1932 was nearly 18 million dollars. For each thousand of population there were 4 1-3 fires, and the per capita loss was $2.48.

No more important task confronts us than the saving of life and property. With this thought in mind, the Greater New York Charter was amended in 1933, the Governor signing Chapter 764 on April 6, consolidating the personnel and the functions of the Bureau of Fire Prevention with that of the Bureau of Buildings, forming a Department of Buildings in each borough, having in mind that stability of construction is a desideratum to be attained first and foremost.

Fire Regulations in Buildings

Public buildings over 20 feet high where persons are

harbored to receive medical, charitable or other care are required to be constructed fireproof. So are buildings over 40 feet high and 5,000 square feet in area where people congregate for civic, political, educational, religious or recreational purposes. This establishes a principle that places of public assembly must be fireproof. Likewise tenement houses or multiple dwellings over 6 stories in height should be so constructed. Every other building over 75 feet high, and every garage, motor vehicle repair shop, or oil selling station exceeding 50 feet in height must be built fireproof.

Provisions as to Sprinkler Protection

The protective value of a sprinkler system is evidenced by that provision, every building within the fire limits exceeding 7,500 square feet on an interior lot, or 12,000 square feet facing two streets, or 15,000 square feet facing three or more streets, need not be fireproof unless the area is double this amount when a sprinkler system is installed. Non-fireproof garages or oil selling stations are required to have the columns and girders and the floor and roof construction protected with fire retarding material. The Board of Standards and Appeals prescribes by rule how this should be done.

The Charter provides how shavings shall be stored by carpenters; regulates the kindling of fires and discourages chimney fires by prescribing a penalty for them.

Hoistways, well holes and iron shutters are required to be closed at the completion of business daily as a protection from exposures. Inasmuch as a frequent cause of fires originates with the lighting, lights are required to be protected.

Fires or open lights on vessels transporting petroleum are prohibited.

The Commissioner of Buildings is required to compel the periodical holding of a fire drill as a practice in the use of exits and buildings where numbers work or congregate.

If the laws for the protection of buildings and their occupants are not complied with and the premises are considered unsafe, application may be made to the Supreme Court for a mandate to vacate. This has been done in several cases.

"Philadelphia" Fire Tower Provided For

All new factory buildings over four stories in height must be built fireproof with two exits on every floor, and when the building exceeds 100 feet in height one of the exits shall be what is known as a Philadelphia fire tower. Before entering this stair, the occupant first enters the open air to avoid danger from smoke and suffocation.

Stairways in all factory buildings over one story in height must be constructed of incombustible materials and enclosed fireproof. A basic principle insists that all exit doors open out.

To prevent the travel of fire from floor to floor, all elevator and dumbwaiter shafts, vent and light shafts, pipe and duct shafts, hoistways, and all other vertical openings shall be enclosed fireproof.

Even in old buildings built before October 1, 1913, where manufacturing is carried on, two exits remote from one another are required.

Number of Persons in Factories Limited

The population of factories is limited to the number that can safely escape by means of the exits. In a new building 14 persons are allowed for every 22 inches of stair; and in an existing one, built before October 1, 1913, 14 persons are allowed for every 18 inches of stairway. This allowable occupancy may not control if there be not sufficient sanitary accommodations.

In a factory building more than two stories in height, in which more than 25 persons are employed above the ground floor, an interior fire alarm signal system shall be installed, and fire drills are required to be held every month. Where a sprinkler system has been substituted an alarm and drill are not considered necessary.

In factory building over seven stories of 90 feet in height, in which wooden flooring and trim is used and more than 200 people are employed, an automatic sprinkler system is required.

Since combustible clippings and waste accumulate on factory floors and cause fires from discarded smoking materials and in other ways, fireproof receptacles must be provided for safe temporary storage.

Smoking in factories is prohibited, and such is a menace which must be curbed if the fires, fatalities and losses are to be reduced.

Protection of Outside Openings

Every business building over 40 feet high is required to have the window openings protected with iron shutters, fireproof windows or open sprinklers. This is to shut out fires originating in nearby structures. In 1898 the Vanderbilt Building caught on fire from the Nassau Chambers, 40 feet away. The iron shutters hung on nine windows on each story were left open. The need for window protection was emphasized by the Baltimore conflagration. The absence of shutters or fireproof windows permitted the fire to get beyond control.

Regulations for Hotels, Theatres, and Public Buildings

The hazard of panic is present in all buildings of a public character, such as hotels, churches, theatres, restaurants, railroad depots, public halls and other buildings of public assembly, including department stores where large numbers congregate. In such the halls, doors stairs, seats, aisles and lighting are subjects for consideration to afford safe egress in case of fire or accident.

Theatres and other places of amusement accommodat-

The Funeral Pyre of Ten Aged Women Inmates

Firemen need no description of this building. They can tell from the character of the ruins, the unsafe construction of the building at Brockville, Pa., which housed the Pennsylvania Memorial Home. Fire started in a washroom and spread rapidly. Ten aged women inmates who were bedridden, burned to death, and five others were rescued. Ashes and twisted bed frames are all that were left of the home.

ing over 300 persons must be constructed and arranged in accordance with provisions of the code. Hose and standpipe are required; the stage must be protected with a sprinkler system. A fire pump and gravity and pressure tanks are required. A feature of every theatre is the metal or asbestos curtain at the proscenium, separating the stage from auditorium.

Inasmuch as fire fighters have of necessity to ventilate fires in their work for various reasons, skylights must be constructed over the stage and so arranged as to open automatically, drawing the fire upwards and with the curtain preventing it mushrooming out over the audience. All scenery and drapes are required to be so treated as to be flame-proof.

The Iroquois Theatre Fire in Chicago

In December, 1903, a fire occurred during a matinee in the Iroquois Theatre in Chicago, resulting in the loss of 566 lives. It started on the stage among some drapery. In less than 30 minutes it was extinguished. Loss of life was due to panic. Standees were in the aisles. There was no aisle back of the seats. Those coming down from the balcony had to pass through the lower door in order to exit, instead of by way of a separate and independent stairway. There were no roof vents, the skylights over the stage did not open and the proscenium curtain could not descend. The inside doors opened inward. Many of the outer doors were frozen fast and could not open out.

Standpipes for High Buildings

All buildings over 85 feet in height and 10,000 square feet in area are required to have standpipes, with hose on racks, valves, checks and a gravity tank above the roof with a 20-minute supply of water for immediate use in case of fire. By the time this is exhausted the firemen would have their pumper connected with the siamese at street level with water supply sufficient until extinction. A standpipe substitutes for the "fire plug" or hydrant at the curb a hose outlet in the staircase on each floor of the building.

Inasmuch as illuminating gas at a fire is a menace to firemen and others in the building an accessible stop cock on the supply pipe is required on the outside of the building to shut the gas off.

The Law as to Inflammable Liquids

Chapter 10 of the Code of Ordinances regulates the refining, distilling, manufacture and storage of fuel oil, volatile inflammable oil (such as gasoline) and illuminating oils (such as kerosene) and lubricating oils. The floors of premises where such are permitted shall be kept clear of waste paper and other inflammable material, and shall have metal cans for sawdust or cotton waste for cleaning and also sand buckets for use in extinguishing fire.

An inflammable mixture is a liquid or substance which emits an inflammable vapor below 100 degrees Fahrenheit. Kerosene oil, a product of petroleum, does not emit an inflammable vapor below 100 degrees Fahrenheit. A combustible mixture is defined as one which emits an inflammable vapor between 100 degrees Fahrenheit and 300 degrees Fahrenheit when tested.

Inflammable mixtures would be dangerous to use as a stove polish or insecticide, so such use is forbidden. With a flash point below 80 degrees Fahrenheit such shall not be used for metal or furniture polish or cleaning fluid. Each bottle, can or container shall contain a warning "Caution, do not use near fire or flame."

Commercially combustible and inflammable mixtures may be shipped in 5-gallon cans or steel drums of 55 gallons capacity.

Inflammable or combustible mixtures may not be manufactured

(a) within 50 feet of a hospital, theatre, or place of assembly
(b) which is occupied as a tenement house, dwelling or hotel;
(c) which is of wooden construction;
(d) while is artificially lighted by any means other than electricity;
(e) where drugs or tobaccos are kept for sale;
(f) where dry goods or other material of a highly inflammable nature are manufactured, stored or sold;
(g) where matches rosin, hemp, cotton or any explosives are stored or sold.

(*To be continued*)

Fire Department Awaits Burning Ship

With more or less frequency, cases have been reported of motorists driving burning automobiles to the door of some fire station so that the firemen could extinguish the blaze. But it is rare for a Fire Department to constitute a reception committee for a burning ship.

Fire broke out in the cargo hold of the "City of Montgomery," headed for New York City. A radio message was received that a fire on the boat was under control. The fire boat Gaynor was assigned to be on the lookout for the incoming vessel, and when the boat was sighted in the lower bay, the Fire Department was prepared to handle the situation. The boat was docked and the passengers taken off at once. The "City of Montgomery" was then escorted by

New York Firemen Climbing Aboard the Burning Ship

The boat was carrying a cargo of turpentine, rosin, lumber, hides and cotton. The ship listed sharply after it was tied to the dock.

the fire boat to an empty pier where it was wharfed. Firemen then opened the cargo hatches and discharged heavy streams into the hold.

The fire was extinguished without undue danger to shipping. Chief McElligott, Assistant Chief Kidney, Deputy Chief Waldron, Battalion Chief Guinnee and Acting Battalion Chief O'Toole were on the job. Through the able action of the department, the fire was confined to the hold of the ship.

Four-Wheel Brakes

Opinions of fire apparatus manufacturers concerning the practicability of changing braking equipment on fire department apparatus from two to four wheel brakes. Some advise against the change.

THE question of four-wheel brakes for fire trucks was discussed at the convention of the International Association of Fire Chiefs held last year. A speaker, it is reported, stated that it would cost about $4,000 to change an old type apparatus over to four-wheel brakes.

A Chief writes, "We have installed B.K. vacuum brakes on several of our pumpers. Of course this leaves all our braking power on the two rear wheels as before. The cost of installation was very small compared with the added efficient braking power. Can you tell me whether there is any reason this type of brake should not be installed on a fire apparatus, in particular, a pumping machine?"

This problem was submitted to the leading fire apparatus manufacturers for their comments. As they requested that names be omitted, the following statements are given without any kind of identifying information.

Axles Must Also Be Changed

One company sent the following reply:

"In the first place, a fire truck like all motor propelled vehicles is designed with given factors and with mechanical limitations existing at the time the truck is developed. Years later added performance from brakes is desired. The adding of greater leverage by means of B-K vacuum cylinder does improve the rear wheel brake performance but other problems must be expected to develop. The axle and the brakes were never designed for this added power. The drums in many cases were too light, brake shoes in some cases were of a type that did not permit the full benefit from the power brake. The tumbler shaft which carries the brake levers and cross shaft in the frame usually were of too light construction for power braking and should be changed as well as other parts. At the best, power cylinders are an improvement and not a cure for brakes designed 8 or 12 years ago.

"In order to wholly modernize the brake system, it is of course, necessary to change axles both front and rear and this is an expensive proposition. Where we make this vacuum cylinder installation we usually put on new Gunite drums in place of the pressed steel drums and always change the tumbler shaft assembly and in some cases the brake leverage.

"I do not recommend misfitting a job with a front axle with brakes that do not in any way tie up or balance with the chassis design."

Dangers of Added Braking Load

A prominent apparatus official writes:

"The application of booster vacuum brakes or air-brakes to a design worked out for manual brakes is sometimes fraught with many possibilities. The load placed on the braking system may be entirely too much. It may result in wheel troubles, brake part troubles and even accidents. We have actually had such experience.

"Another thing to be taken into consideration is the braking effort that can be found in a certain area of brake band is not only figured against the band but also against the amount of tire area and contact with the ground—and you can also take into consideration the distribution of the load and the weight of the vehicle. By no stretch of the imagination, or through the application of any auxiliary mechanical device, can you approximate the result that is secured from 4-wheeled brakes.

"It has been our experience that this brake question is more or less a sore subject. Some types of apparatus had indifferent brakes. In the days of two-wheeled brakes, the results were fairly satisfactory, and as fire apparatus a few years ago came close to having the right-of-way, there was less demand for quick stopping. Consequently, some of the old brake designs have the experience today that the average person has who is operating an old pleasure car. When he comes to an unexpected traffic light, and the fellow ahead of him makes a regular stop, the two-wheeled brakes boy just about pushes his pedal through to the radiator.

"The natural result is that a number of cities have wanted to convert old apparatus to the new design. Unfortunately, it is a fact that many makes in use cannot be so converted. The design won't permit and the cost of the change, as stated, really covers what amounts to a new chassis, I think that $4,000 is probably quite conservative in many instances.

"The supplying of a front axle for braking equipment is not enough because it cannot be coordinated with the old style rear axle. Therefore, it takes two new axles, and as the new axles have different spring centers and require a different hookup on the front-end and as many of the old cars were right-hand drive, there is just all kinds of trouble ahead for the people who try to change them."

Cost Less Than Reported

The President of one company states:

"On all the 600-gallon pumpers we build, we install B.K. vacuum brakes, as well as on the larger size pumpers. On the 500-gallon pumpers the frame is drilled for a B.K. booster brake therefore making it very easy to install B.K. booster brakes in the field. All we have to do is ship it to them and any man who can put on bolts and nuts, can install a booster brake on any of our smaller jobs. B.K. booster brakes should be installed on all types of fire apparatus according to my opinion. It enables the driver to stop very quickly and especially on the large jobs, the 1,000-gallon pumpers where we have a very powerful motor and comparatively heavy load, you gain considerable momentum. When emergency arises B.K. booster can do miracles in avoiding accidents.

"The cost of installing 4-wheel brakes depends upon the make of the truck but I cannot conceive of any truck built where the cost would even be $1,000 per truck. If it is necessary, a man can install all new axles or wheels for less than $1,000."

Job Considered Simple

An official of another company writes:

"We have modernized a number of pieces of apparatus but have found in most cases that it is entirely too expensive to change from two-wheel brakes to four-wheel brakes. The consequence is that we rebuild the apparatus entirely from head to stern and install with the two wheel brakes the B.K. vacuum booster system such as your reader mentioned. This gives considerable more braking effect than the cars had when they were originally delivered although they still remain two wheel rear brake jobs.

"The installation is very simple, one that has been worked out covering various models, and the price of the necessary equipment to make the change runs from about $100 to $150 depending upon the type of apparatus. The installation is only a matter of about a days work for a good mechanic.

"At the present time we are using the B.K. vacuum booster system on all of our heavy duty models of apparatus as our standard equipment, and we know that it is worth while, and any city contemplating the installation of the B.K. vacuum system on one of its pumping engines, especially the older type where the brakes were never none too good, would be spending money wisely."

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

SPRING CLEAN-UP CAMPAIGN

WHEN the sulphur and molasses bottle is removed from the dusty top pantry shelf; when the manager of the home tactfully suggests the moving of some heavy pieces of furniture, then one can safely say that spring has arrived with all its heralded glory. The change in season seems to bring with it a desire to do things, to brighten and freshen parts of the home. Spring clean-up has become an accepted American custom.

Fire Departments and other city departments have encouraged a more general observance of this practice, for a home free of rubbish and trash is a home free from the more common fire hazards.

To encourage a thorough clean-up, many places provide trucks on certain days to haul away rubbish placed in front of the house. This free service provides an incentive for a thorough cleaning of the attic and the cellar.

In the box on this page is the problem in full that is discussed in this issue. In the box on the following page is the question that will be treated in the next issue. Should you have some comments that you would like to add to the next discussion, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 W. 40th Street, New York, N. Y.

Discussion of the Question

Charles E. Schrom, Chief Engineer, Washington, D. C.: In cooperation with the Washington Chamber of Commerce, spring clean-up campaigns have been sponsored in the past and it is proposed to hold a similar campaign this year. Our cooperation in the matter has been doing principally such things as they have requested. These activities, in our opinion, have not shown any material reduction in the matter of fire losses.

This year we propose to handle this matter in a somewhat different manner by soliciting the aid of the various civic associations and conducting a contest with prizes to be awarded to those showing the greatest activity along this line.

The Fire Prevention Division of this department is cooperating to the extent of following up any hazardous conditions brought to its attention as a result of these activities.

In our opinion the direct results of such a campaign will be hard to measure, but we anticipate better results than have been apparent in the past when campaigns consisted only of publicity work by the newspapers, radio, etc.

Charles J. Henry, Chief, Lexington, Ky.: A clean-up campaign is conducted each spring in this city and at that time special attention is called to the accumulated trash and paper in basements, attics, outhouses and other places where an accumulation of waste material is liable to be. During these campaigns the city has special trucks and wagons to haul off the refuse, and the daily newspapers have given the campaign plenty of publicity outlining the routes of the collection trucks several days in advance so as to enable the public to have trash conveniently placed for collection. The services of all the members of the Fire Department is obtainable at all times, and anyone desiring information relative to fire hazards is at liberty to call upon it. The laws of Kentucky do not permit the inspection of private homes or apartments, unless requested by the owner or occupant.

J. R. Eldridge, Chief, Johnson City, N. Y.: Our Mayor and City Counsel designate a week in early spring each year for our clean-up campaign and advertise this in local papers a week or two in advance. The Fire Department, Superintendent of Streets, Schools and Civic Clubs aid in carrying out this campaign.

City trucks are available during the entire week for free cartage and all citizens are requested to make a thorough clean-up and leave their collection of rubbish, etc., at the curb to be taken away.

Merchants make a special effort to call attention to clean-up week through displaying in their windows paint, brushes, mops, rakes and garden utensils.

I personally feel these campaigns have resulted in holding our fire loss down at least 50%.

While we make periodical inspections throughout the entire year, our Fire Department, during clean-up week, inspects all mercantile manufacturing plants, tenement blocks, homes, etc., to aid in carrying out this plan to its greatest effectiveness.

P. M. Cogan, Chief, Omaha, Neb.: We extend the facilities of our department to aid in conducting the spring clean-up week. We also issue bulletins to the Boy's Fire Patrol and aid the committee in charge of the work. Special inspections are made of territory which we believe requires same.

During this period fire losses show a decline and we get good cooperation from citizens.

We are making regular inspection of all business institutions, keeping the newspapers advised of all activities concerning clean-up programs, using radio for prevention programs, and inspecting residences and serving follow-up notices for removal of hazards to further cooperate with the other municipal organizations in our city in eliminating many of the winter accumulations of rubbish, etc.

W. Harry Lister, Chief, Rockville Center, N. Y.: We operate a fire prevention bureau in connection with the Fire Department, which makes periodic inspections of all public buildings. We offer our services to organizations to lecture on fire prevention.

We attribute our low fire loss to these inspections. Rockville Centre is a village of approximately 16,000 population and our average fire loss for the past five years approximates $6,000.

We are inaugurating a plan this year to send to 4,000 homes in the village a

HERE IS THE PROBLEM

In what way do you cooperate with other organizations in your city concerning the conduct of spring clean-up campaigns?

Have these campaigns resulted in a decline, even if temporary, in the fire losses?

Can you suggest some effective plan of coordinating the customary house inspections by firemen with the municipal plan of spring clean-ups to eliminate many of the winter accumulations of rubbish in or about the homes?

circular letter advising residents to clean their cellars, attics and premises of all trash and rubbish. We further offer the aid of our bureau for inspection and suggestions.

We also suggest that the work be done by our unemployed firemen which gives the volunteers a chance to get work. We further offer our services to burn off lots that are overgrown with grass and bushes. The local ash and garbage collection cooperates to the extent that they will send trucks directly to the premises in order to facilitate the clean-up.

Danile H. Shire, Chief, Mason City, Iowa: We cooperate during clean-up week in the spring by having a piece of apparatus with signs on each side parade through all parts of the city daily calling attention to good housekeeping and that clean attics and cellars are not fire hazards. We believe that these campaigns have helped to a great degree in lowering fire losses.

The High School Music Society is glad to take all magazines and papers that the Boy Scouts collect. The Society bales them and sells them and the funds are used for school purposes. The old clothing, bedding and furniture is taken by the Salvation Army for distribution to the needy. The newspapers run notices for the collection of everything that the householder wishes to get rid of and tells for what purpose the articles may be used. The papers also advise that articles of no value should be placed in a pile in the alleys on an appointed day and the Street Department collects this and takes it to the dumps. The scouts make a canvas and locate the paper, etc. It is collected on other days. The result is a general clean up and the Chamber of Commerce is the guiding hand of it all.

We have not had an attic fire for over three years, and by this I mean a fire that was caused from the inside of the attic. There was a time in this city when you could not get around in the attics.

Frank H. Smith, Chief, El Dorado, Ark.: We promote clean-up week by giving talks at all Civic club luncheons and public, private and parochial schools. We urge the school children to make a rigid inspection of their homes, and request that they inform their parents of the talks made. We also ask them to be observant of hazards and explain the methods of eliminating them. Children should be impressed with the plan of making every day an inspection day, and inform them that they should report a hazard to the Fire Chief upon discovering same. I have used the Boy Scouts both in spring clean-up campaigns and fire prevention week, and it is surprising the hazards these scouts can locate. They often report hazards that my men overlook in their monthly inspections. Make friends of the scouts and they in return will be a great assistance to the department.

Picked and trained firemen make the house inspections. Neatness and courtesy are essential when making inspections. Firemen assigned to make these inspections should be able to impress upon the minds of occupants of such houses the importance of the visit, so that the inspection will attract favorable notice. Citizens gladly welcome an inspection when they realize that the city officials, civil organizations and schools are coordinating with the campaign.

Wm. L. Ryan, Chief, Dubuque, Iowa: The Fire Department, cooperating with the Chamber of Commerce and all Civic Bodies, conduct a general inspection throughout the city and make a report on premises having open basements that are used for rubbish disposal, yards overgrown with weeds, etc. Owners are ordered to remove old waste material that constitutes a fire hazard.

The city makes a weekly collection of ashes and rubbish. This together with the annual spring clean up is responsible for the removal of many fire hazards, which in turn has been responsible for the reduction of fire losses.

I recommend that cities not having a regular collection of ashes, etc., divide their city into districts and with the cooperation of the press, notify all citizens, a week in advance of clean up week, of the date of collection in their district, etc., so that it will be possible for them to clean up their premises of waste material.

F. J. Ostertage, Chief, Burlington, Iowa: In conducting our spring cleaning campaign I ask the cooperation of our local papers, Chamber of Commerce and Street Department. I believe this clean-up campaign assists in reducing our fire losses.

We have two clean-up campaigns every year, one in the spring and the other in the fall of the year. Numerous articles are written for the newspapers regarding fire hazards and the elimination of same.

Citizens are requested to pile all rubbish in alleys on certain days and same is removed by the Street Department free of charge, and I think this is a very good way to eliminate a good many fire hazards.

We do not make inspections of private homes unless requested to do so.

Chas. C. Dougherty, Chief, Malone, N. Y.: We conduct inspections twice a month both in business and tenement quarters making notations of those where accumulation of rubbish, etc., have coltected. We also have spring clean-up campaigns. At the time of the campaign owners or tenants of places where rubbish has collected over the winter months are requested to "clean-up" and if they are not in a position to hire a truck to haul the debris away, the street superintendent appoints someone to do this without charge. We have found as a general rule, that people will cooperate with the Fire Department if they are treated in a courteous manner.

These inspections and campaigns have decreased the fire losses in both the residential and business sections.

Geo. Alford, Chief, Pine Bluff, Ark.: We ask assistance in making the clean-up week campaign a success by burning grass around all vacant buildings and cleaning all vacant lots, placing "no dump" signs on vacant lots, etc., that may invite dumping.

Barns, out-houses and homes would be subject to catch fire unless grass and rubbish was removed. "No Dump" signs have a tendency to keep persons from piling their trash and rubbish in vacant lots. The promiscuous dumping of trash and rubbish is a distinct fire hazard and should be prohibited.

A splendid manner of familiarizing the citizens of the city as to what is to be done during clean-up week is through publicity in the newspapers. During this time firemen should make through inspections of all houses pointing out to the occupants the various fire hazards and give reasons for removing same. Attics, cellars, chimneys, flue openings, etc., should be inspected by the firemen. The firemen should be intimate with the facts concerning the campaign and should carry them out to the "letter." This will have a tendency to increase the efficiency of the men and also raise their interest to the highest possible point.

Geo. Haggerty, Chief, Berkeley, Cal.: The idea of having a spring clean-up campaign has not been particularly pushed in the past, since we are continually advocating the elimination of hazardous accumulations through our inspection system.

To be most successful a clean-up campaign should be extensively advertised through:

a. newspapers; b. poster distribution; c. contacting Chamber of Commerce, Junior Chamber, and service clubs.

The clean-up dates should be officially proclaimed by the Mayor. Having laid this groundwork, the City should next be divided into districts and a number of refuse trucks should be delegated to each district. The man power could be supplied through the CWA. Of course collections should be made free of charge and, to add interest, a record of weight of refuse collected daily should be kept and recording in chart form in the newspapers. To accentuate the importance of cleaning up, firemen might be delegated to make a concentrated inspection of all premises in the various districts during the campaign period.

HERE IS THE PROBLEM FOR THE NEXT ISSUE

Does your department operate with a set tax levy as provided by your local charter?

How many mills or cents per $100 assessed valuation is set aside for department operation and maintenance?

Is this method of budget operation successful?

If you use a different method, or can suggest a much more effective plan, such comments would be appreciated.

Owen C. Dunn, Chief, St. Paul, Minn.: I have always been a member of and have taken active part in the Spring Clean-Up Campaign Committee. In that way I made contact with people whom I could not otherwise have met. Through such contact I have been invited to inspect homes, talk to home owner organizations, civic associations, and parent-teacher groups, all of which, I believe, has helped to curtail fire losses. Of course, there is no way of measuring such benefits in dollars and cents.

Wm. H. Wayand, Chief, Scotia, N. Y.: Each year we have a clean-up campaign, generally a week in the month of May. In this section of the country the weather is more suitable for cleaning yards and lots at that time of year.

We appeal to the home owner, through the press, but carry on a rigid inspection of all business places. Full cooperation is given by the Health Department and Public Works Department.

I am convinced that such campaigns are beneficial to any community in lowering fire loss. For the last fiscal year just ended our per capita loss was $0.14. Our population is approximately 7,500.

We have no ordinance allowing firemen or anyone else to enter and inspect private dwellings but I believe such a procedure carried out about one or two weeks before the campaign calling the occupants' attention to such hazards would be very successful.

John G. Ford, Chief, Trenton, N. J.: The Department of Garbage & Ashes, the press of the city, and the Fire Department inspectors cooperate with one another to make the spring clean-up campaign a success.

The press obtains good results by impressing upon the housekeepers the benefits derived. It is well, too, that through the press tenants and house owners are informed that the Department of Garbage & Ashes will take away all such trash. This publicity induces the cleaning out of cellars, attics and yards. An intensive campaign of this sort carried on for a week or two each year undoubtedly contributes to the reduction of annual fire losses.

Tom Plows, Chief, Chariton, Iowa: Our only means of cleaning up in the spring is by cooperating with our City Counsel and Mayor. We run a notice in the papers informing the people of the drive we are making in an effort to clean-up and reduce fire losses. The citizens are urged to collect all the rubbish and trash and place the accumulation on the street, starting a certain day. We then send out men to collect the debris. We have had fairly good success.

I believe these campaigns have helped cut down our fire losses.

Our town is divided into districts, we assign two men to inspect every house in a certain district at regular intervals.

L. P. Willis, Chief, Pueblo, Col.: The Chamber of Commerce and an organization in our City called the "30 Club" has been working with our department and has helped us in fire prevention and cleaning up. We think spring clean-up campaigns, have lessened our fire losses.

Wright Hedges, Chief, Atlantic, Iowa: We sponsor the spring clean-up campaign but do not ask other organizations for any help. Our newspaper puts it over for us in a "big way," and furnishes as much space as is desirable.

There is a natural decline in fire losses from campaigns of this kind. It is temporary unless followed up by fire prevention publicity. A well written article once a month would do wonders.

Citizens will take advantage of anything that is free. A free pick up of rubbish accumulated in the house would produce results. There will be some imposition but it would be worth while.

Wm. J. Grove, Chief, Hannibal, Mo.: We cooperate with all organizations in the conduct of spring clean-up campaigns. We have inaugurated clean-up for the last week in May.

We run a notice in our daily press previous to the set date notifying the public of the planned campaign week.

Newspaper notices instruct the citizens to collect all rubbish and trash and to place it on the curb. The city is divided into six wards. The Street Department starts collecting the rubbish the first day in the first ward, the second day in the second ward and so on down the line until all the wards are cleaned up.

We believe it has aided materially in helping to check fires.

We have quarterly inspections for all business houses and factories. We have a city ordinance permitting us to inspect all basements in homes.

Ross Schmidt, Chief, Crookston, Minn.: Each spring a clean-up and paint-up campaign is put on to last for one week. This program is published in both papers, sponsored by the insurance companies and paint concerns, and signed statements from the Mayor and Fire Chief. There is no doubt that this campaign is effective in reducing the fire loss because we obtain the cooperation of the public in our efforts to clean-up and that is bound to reduce the fire hazards.

Harry H. Kerr, Chief, Princeton, N. J.: At the present time we do not conduct clean-up campaigns.

The plan I would like to see in effect in our town would be an inspection of every home and business site three times yearly in cooperation with the local Health Board.

Jos. Fifarek, Chief, Traverse City, Mich.: We make our regular inspections and every so often make a report on conditions existing in lax districts. We publish these reports through the newspaper, and by bringing them before the public, we develop a "clean-up" spirit among the people.

Our clean-up campaign the year around has in the last six years materially helped in reduction of our fire loss.

In past years, we designated the first week in May as clean-up week and the other fifty-one weeks were somewhat lax, but now we not only have this week for clean-up campaign, but also make our monthly inspections. At times we run into what you might term as "hard-heads," but we can usually get "under their skin," and make them understand what good housekeeping really is when higher insurance rates, etc., are explained to them. Also, we give the newspaper a list of various hazards that exist in all places and recommend that they be taken care of. Then if a fire should occur from one of these causes, we make the report to the newspaper pointing out that the fire could have been avoided if the hazard in question had been eliminated. The general public is thereby made fire-prevention minded.

Elmer J. Brown, Chief, Binghamton, N. Y.: We cooperate with other organizations during spring clean-up by issuing proclamations in newspapers from the Mayor, City Manager and Bureau of Fire. We also conduct external inspections as to yards and alleys.

We believe that a decline in the fire losses is noticeable due to the annual spring clean-up campaign.

This Bureau takes the position that "a man's home is his castle" and that no fire inspector has any legal right to enter his home without a request from the owner to make such inspection.

James A. Schooley, Chief, Medina, N. Y.: We inspect buildings and basements in business parts of the town each month. We have never inspected dwellings. Collection of rubbish is made by the Street Department twice a year during the months of April and November in the residential district.

Arleigh C. Smith, Chief, Owatonna, Minn.: The local board of Fire Prevention, the Board of Health and the newspapers aid in putting over the spring clean-up campaign.

We notice a decrease in fire loss after spring clean-up but it could be improved, we believe. This could be done by having a small card printed and mailed to all homes. This could be mailed with the water bill every quarter, with no additional expense.

A. S. Warren, Chief, Dodge City, Kan.: We cooperate with the Chamber of Commerce and the Professional Womens' organizations and also give talks at all the schools and we find it has reduced our fire loss.

A good method to further reduce fire losses is to educate the people. If they will report any fire hazard to the Fire Chiefs they will inspect it at once and have it corrected, and this can be done when they have your confidence.

Rue Chrisman, Chief, Roswell, N. Mex.: We set a date or time for spring clean-up and have it published in the papers for a week or ten days. The City Street Department furnishes trucks to aid in putting the spring clean-up campaign over. The Boy and Girl Scouts always help materially.

Fire losses have shown a decline to a great extent after these campaigns.

I think by giving publicity to the fact that all rubbish and trash will be hauled away free of charge in these campaigns the public will be glad to avail themselves of this service.

John J. Gilday, Chief, Hoboken, N. J.: In our city we have a very rigid fire prevention ordinance which is strictly enforced daily by our Fire Prevention Bureau. We also have the hearty cooperation of numerous civic organiza-

tions. We have no spring campaign as we are at it every day.

John J. Shea, Chief, Hoosick Falls, N. J.: There is a week set aside in May for the removal of all kinds of rubbish outside of old automobiles, and we have very good success with it. Everybody seems to cooperate with the village officials and the Street Department does all the removing. These campaigns have saved us a good many runs in the spring time.

H. C. Crumb, Chief, Bay City, Mich.: The spring clean-up in this town has up to this time been conducted by the Street Department under the City Manager's orders and with the aid of the newspapers.

Allow me to make a suggestion that city firemen start this campaign a week or so before the clean-up giving the house owners time to get all rubbish out of attics and basements or any place that there may be any, then have this accumulation taken away by the city Street Department. In this way a great amount of the fire hazards in private homes can be eliminated.

Joseph Roberts, Chief, Tucson, Ariz.: We cooperate with other organizations in our city by inspecting the business districts during spring clean-up campaigns.

Harry L. Waugh, Chief, Fulton, N. Y.: We inspect quarterly, as a department, all business places and require that they be kept clean. Fulton has a weekly collection of garbage, ashes and rubbish, so spring accumulation is small and thus taken care of. This insures that a small fire is not enlarged by extending to any storage of inflammable material and is well worth the effort.

Firemen could assist by examining chimneys and smoke pipes, although late summer or early fall would be preferred. Fire educational cards could be given to school children with a request to place their homes on the standard shown.

H. J. Callahan, Chief, Fort Dodge, Iowa: The Junior Chamber of Commerce has sponsored the spring clean-up and paint-up campaign for a number of years in this city. We cooperate with them to the utmost of our ability. Newspaper articles are written for them. We have a piece of apparatus cover the town carrying banners suggesting clean-up. We take part in parades put on by the Junior Chamber during that week.

Fires during the spring and summer caused by rubbish in basements and back yards are practically unknown where formerly they were quite common.

In my opinion one of the best plans to make these clean-up campaigns and inspections effective is to have the city street department or sanitary department trucks pick up all rubbish that the householder puts out. This makes an incentive as the rubbish is taken away without cost.

J. H. Smedley, Chief, Camden, Ark.: We cooperate with all city organizations by advising them that the Fire Department is sending a trash wagon out to pick up all rubbish that has accumulated on or around the home. After asking the cooperation of the people and they fail to clean up, a notice is served them and they are brought to court. This is the way to get results! I find that we get the best results and reduce fire losses from ¼ to 50% of the past year.

Have the firemen clean up around their homes and then suggest they cooperate with their neighbors by explaining the importance of keeping all rubbish cleaned up. Have the firemen explain that greasy rags, oily mops and such other articles should not be stored in closets and dark and damp places, as they will cause fires.

Edgar E. H. Wheeler, Chief, Franklin, N. H.: We are sorry to say that we do not cooperate with any civic organizations of our City as I have yet to hear of any of them conducting a fire prevention campaign. I do what I can to keep this subject before the citizens by publishing articles in the local paper in the Fall, Spring and before the Fourth of July. However, I find this a rather expensive practice, as I have to pay for all the articles inserted.

The citizens as a whole have tried to follow our suggestions and seem anxious to eliminate all fire hazards, I find in most cases if there is a dangerous condition it is because they do not realize the danger.

Our fire losses have been the smallest this year for several years. I believe that this is because the public is becoming more fire conscious and that we have been able to stop several threatening fires before they gained any start.

We do not make any residential inspections, but do so in the business district. We have a city ordinance for the collection of rubbish and the fact that this is done once a month throughout the year is a big factor in keeping this hazard eliminated. If people have the opportunity of getting rid of waste material without any expense very few will be satisfied to have it accumulate.

Ernest G. Beckert, Chief, West New York, N. Y.: We have six fire companies. The Captain of each is assigned to his own district for clean-up week. There are quarterly inspections made of all buildings in the town, and there are spring and fall clean-up weeks, the results of which are very gratifying. For instance the drop in property loss by fire from 1932 to 1933 was $39,163. The loss in 1932 was $73,739; and the loss in 1933 was $34,576.

Cards are issued and distributed giving the specific days on which collections of garbage will be made in certain districts. There are extra trucks on during these periods to pick up all refuse and accumulated material.

DETROIT REPORTS LOWEST FIRE LOSS IT HAS ENJOYED IN YEARS

Salvage Covers Have Been Means of Saving Much Property—Many Incendiary Fires Discovered Through Work of Arson Squad

DETROIT, Mich., reported a fire loss of $1,887,048 for 1933, the lowest the city has had in many years. The Fire Commissioners also reported to the City Council that there were 12,968 alarms of which 2,152 were false and 823 were unnecessary. Fire apparatus was sent outside of the city limits fifteen times during the year. There were 730 special calls, principally for the services of rescue squads.

The low fire losses for the year involve a building valuation of $120,389,754 covered by $106,407,639 insurance. There were only fifteen second alarms, three third alarms and one fourth alarm. Six fires during the year showed a loss of over $30,000.

The total number of runs by apparatus was 44,343; hours of service 5,673; 96,646 miles were travelled and 1,121,680 feet of hose line were stretched. One hundred and thirty-two persons were burned or injured; 11 were found dead; 41 were assisted down ladders; 5 were rescued from buildings; 4 were rescued with life nets; 1 from a cave-in and 2 were assisted down stairways. Rescue squads resuscitated 215 persons; 139 persons treated with pulmotors died.

Detroit Fire Department spreads its own covers in salvage operations. It is estimated that Detroit firemen saved insured property amounting to $29,535 and non-insured property values at $27,900, with salvage covers. High pressure system was operated for 251 fires, a total of 19 hours and 45 minutes, pumping 156,464 gallons. Detroit has 58 pumpers, 30 ladder trucks, 1 tower, 7 chemicals, 4 high pressure wagons, 4 rescue cars, an ambulance and 2 fireboats. There are 9 pumpers and 5 ladder trucks in reserve.

The Arson Squad investigated 888 fires of which 116 were found to be incendiary. The Department's Ambulance travelled 1,966 miles, put in 189 hours of service, made 123 runs, responded to 20 extra alarm fires with 30 hours service and travelled 151 miles to and from extra alarm fires. Ten members in active service died, of whom three were in the line of duty; there were 13 deaths among retired members of which one was in the call of duty and 14 members retired of which four were for injuries sustained in the line of duty.

The report to the Council points out that the department was confronted throughout the year with many trying problems due to the City's depleted treasury and the most rigid economy program in all branches of municipal service. The lay-off of fire fighters in March, 1932, was rescinded in January, 1933, and discontinued fire companies were restored to service. The report, like so many others in large cities, complains of the increasing menace of false alarms of fire and suggests closer co-operation of the courts and public officers.

Prof. Carpenter Speaks to W. Va. Chiefs

Prof. L. V. Carpenter of the University of West Virginia, Director of the annual school, spoke to members of the West Virginia Fire Chiefs' Association at a meeting held at Morgantown. He plans to hold district schools before the annual short school is held at the university, with the first school scheduled for Charleston early in April.

New Bern, N. C., is awaiting the arrival of new fire apparatus.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Stream Range and Pressure

To the Editor:

Would you kindly give me some authorative information on a hydrant formula that I have in my possession? I refer to the following:

$$P = 120 - \sqrt{12{,}500 - (H + K)^2}$$

Where: P is the nozzle pressure
H is the height or vertical distance of stream
K is a constant. It is 15, and deduct 1 from the 15 for every ⅛-inch increase over 1-inch of nozzle diameter, where used for pressure of 50 pounds or under, and 2 from the 15 for pressures over 50 pounds.

As an example, take the following problem where the distance of the vertical stream is known and the nozzle pressure is wanted:

A 1¼-inch tip throwing a vertical stream a distance of 65 feet; what is the nozzle pressure?

$H = 65$
$K = 15 - 2 = 13$
$P = 120 - 12{,}500 - \sqrt{(65\ \ 13)^2} =$
$P = 120 - \sqrt{6416} =$
$P = 120 - 80$
$P = 40$ lbs. Nozzle Pressure.

Would also like information on the following formula which applies to the same type of problem:

The formula is: $NP = D^2 \div K \div F \div 2.304$

Where NP is the nozzle pressure
D is the vertical or horizontal distance
K is the factor { vertical 5 / horizontal 4
F is nozzle diameter factors, which are the following:

For 1-inch tip 6
1⅛-inch tip 8
1¼ " " 10
1½ " " 12

Take the following problem where the 1¼-inch tip is throwing a vertical stream a distance of 65 feet, what is the nozzle pressure?

$D = 65$
$K =$ Vertical factor $= 5$
$F =$ Factor 1¼-inch tip $= 10$
$NP = D^2 \div K \div F \div 2.304$
$NP = (65)^2 \div 5 \div 10 \div 2.304$
$NP = 4225 \div 5 \div 10 = 2.304$
$NP = 84.5 \div 2.304$ or 36.67 lbs.

S. C. G.

Answer: The first formula, for determining the nozzle pressure where the vertical distance is known is possibly derived from the formula:

$H = \sqrt{240p - p^2 - 1900} - 15$ where H is the effective height in feet and p, the nozzle pressure in pounds per square inch.

For pressures of 50 or less, subtract 1 from the 15 for each ⅛-inch increase in nozzle diameter. Above 50 pounds, subtract 2 from the 15 for each ⅛-inch diameter increase.

The second formula you give where either vertical or horizontal distance is taken into account, may possibly be derived from another formula which is as follows:

The formula for maximum range which is applicable to nozzle pressures over 30 pounds, is S = ½ N.P. + 26, for ¾-inch nozzle. Where S = the horizontal distance in feet and N.P. the nozzle pressure in pounds. Add 5 feet to the 26 for each ⅛-inch increase in nozzle diameter. This formula gives satisfactory results within ordinary working pressure and under ordinary conditions.

The above derivations are only conjecture. The formulas may possibly have been secured from other sources.

If the formulas give fairly good results throughout the different ranges of pressures and nozzle sizes, they are entirely satisfactory for use.

As a matter of fact, all formulas employed in calculating fire stream ranges, friction loss, etc., are empirical formulas, that is, based on experimental data rather than on pure mathematical calculations.

But with reference to the particular formulas you give, we see no value in figuring for nozzle pressure where the vertical reach is known or the horizontal reach is known. By vertical and horizontal reaches we refer to the reach of effective streams and not to maximum distance drops of water will carry. Under these conditions, it would be very difficult indeed to tell by casual glance at what point the stream was ineffective and at what point it was fully effective. For this reason the answer you might secure for a desirable nozzle pressure would not be of much value.

A far simpler method, and equally satisfactory, is to allow 1 pound nozzle pressure for each foot of vertical or horizontal effective reach you desire. This may be a little bit off on low pressures, but you are at least on the safe side.

It is the method followed by most fire service schools.

Chemical Tanks Freeze

To the Editor:

We have had trouble with our chemical tanks freezing. Is there any substance we can put in the tanks to keep them from freezing? We would appreciate any help you may be able to give us. W. B. M.

Answer: There is no substance that you can put into chemical tanks to keep them from freezing and without interfering with the operation of the chemicals.

The only way freezing can be prevented is to keep the room in which the tank is stored heated to a point above freezing point.

Calcium chloride and sodium chloride are used for keeping water in booster tanks from freezing, but either of these would destroy operation of soda and acid solution.

Friction Loss and Discharge

To the Editor:

Will you kindly answer the following problem?

With a 300-foot line of 2½-inch hose discharging 375 g.p.m., what is the friction loss? With 65 pounds nozzle pressure, what is the flow? A. E. P.

Answer: The first part of the problem is readily answered by the use of the formula for friction loss.

It is as follows:

Friction loss (for 100 feet of 2½-inch hose) = 2 x Q x Q + Q, where Q is the flow in hundreds of gallons per minute. In this particular problem, Q = 375 ÷ 100 or 3.75.

Friction loss (100 feet of 2½-inch hose) = 2 x 3.75 x 3.75 + 3.75 or 31.875 pounds.

The friction loss for 300 feet of hose would be 3 x 31.875 or 95.625 pounds.

The second part of the problem is not possible of solution

for the nozzle diameter is not given, nor is there any means of determining it.

The formula for discharge is:

Discharge (gallons per minute) $= 30 \times d \times d \times \sqrt{p}$, where d is the diameter of the hose in inches and p, the pressure in pounds per square inch.

If we reduce this formula down utilizing the nozzle pressure we find discharge in gallons per minute to be: Discharge $= 241.8 \times d^2$.

Now all you have to do is substitute the value d in this formula and you'll have the discharge in gallons per minute.

Montreal Rushes Aid to Outremont

Three lives were lost in a fire which broke out at Outremont, Canada, on March 10 at 6:10 p.m. The alarm was received by telephone and a combination ladder and hose wagon responded. Seeing that the situation was serious, the Captain sent a call to firemen who were fighting another blaze, and an engine company responded. By that time fire was raging in three sheds, and Chief Willis communicated with the City Manager who sent a call for aid to Montreal.

Montreal sent seven officers and thirty men to help out the local force of forty-seven men. Montreal firemen had nine streams on the fire and the Outremont department, five streams. Local police helped lead occupants of the burning buildings to safety.

As an outcome of this fire, a movement has been started for the establishment of a metropolitan fire department for the protection of municipalities surrounding Montreal.

Short School To Be Held in Baton Rouge

A six-day course in firemenship will be held at Baton Rouge, La., April 16-21, under the supervision of the Louisiana State Firemen's Association. Certificates will be awarded to each department or station that has one or more men in attendance at all sessions of the course. Individual certificates will also be presented. The course will be in charge of Capt. Frank O'Callaghan. The other instructors are Chief J. B. Lewis, Shreveport; Capt. William Arnold, New Orleans; Capt. J. W. Faler, Monroe, and Capt. G. W. Sumners, New Orleans. The program follows:

Monday, April 16
10 a. m.-12:00 Noon.—Registration.
12 Noon-1:15 p. m.—Lunch.
1:15 p. m.-1:30 p. m.—Greetings— Hon. W. H. Bynum, Mayor of Baton Rouge, Louisiana.
1:30 p. m.-2:00 p. m.—Rules and Regulations, outlined explanation of course of study—President R. A. Bogan, Louisiana State Firemen's Association.
2 p. m.-2:30 p. m.—Work of the Fire Marshal's Office, Hon. R. J. Gregory, State Fire Marshal.
2:30 p. m.-5:00 p. m.—Demonstration in use of Tools and Equipment—Members of the Baton Rouge Fire Department.
5 p. m.-6:15 p. m.—Supper.
6:15 p. m.-8:15 p. m.—First Aid Instructions—Under Supervision of C. E. Saxon, representative of U. S. Bureau of Mines.

Tuesday, April 17
8:30 a. m.-9:00 a. m.—Calisthenics.
9 a. m.-12:00 Noon. Instructions in use of Tools and Equipment—Drill Masters.
12 Noon-1:00 p. m.—Lunch.
1 p. m.-2:00 p. m.—Fire Streams and Friction Loss—Walter Grant, Louisiana Rating and Fire Prevention Bureau.
2 p. m.-5:00 p. m.—Instructions in use of Pumper, Hydrant Operation—Drill Master, Mr. Grant, Mr. Buchanan, Mr. Church.
5 p. m.-6:15 p. m.—Supper.
6:15 p. m.-8:15 p. m.—First Aid Instructions—Under Supervision of C. E. Saxon, representative of U. S. Bureau of Mines.

Wednesday, April 18
8:30 a. m.-9:00 a. m.—Calisthenics.
9 a. m.-12:00 Noon.—Instructions in use of Tools and Equipment—Drill Masters.
12 Noon-1:00 p. m.—Lunch.
1 p. m.-2:00 p. m.—Care of Hose, Operation and Maintenance of Pumps and Appliances — H. T. Buchanan, Lousiana Rating & Fire Prevention Bureau.
2 p. m.-2:30 p. m.—Discussion of above topic by class.
2:30 p. m.-5:00 p. m.—Field Demonstration in use of Pumper in Drafting Operations—Drill Masters, Mr. Grant, Mr. Church, Mr. Buchanan.
5 p. m.-6:15 p. m.—Supper.
6:15 p. m.-8:15 p. m.—First Aid Instructions—Under Supervision of C. E. Saxon, representative of U. S. Bureau of Mines.

Thursday, April 19
8:30 a. m.-9:00 a. m.—Calisthenics.
9 a. m.-12:00 Noon. Instructions in use of Tools and Equipment—Drill Masters.
12 Noon-1:00 p. m.—Lunch.
1 p. m.-2:00 p. m.—Instruction on Salvage Work by Chief Jas. T. O'Donnell, Salvage Corps, St. Louis, Mo.
2 p. m.-3:30 p. m.—Demonstration in Salvage Work, Supervised by Chief Jas. T. O'Donnell.
3:30 p. m.-5:00 p. m.—Ventilation, its Aims and Methods—Chief John M. Evans, New Orleans Fire Dept. (Followed by Demonstration).
5 p. m.-6:15 p. m.—Supper.
6:15 p. m.-8:15 p. m.—First Aid Instructions—Under Supervision of C. E. Saxon, representative of U. S. Bureau of Mines.

Friday, April 20
8:30 a. m.-9:00 a. m.—Calisthenics.
9 a. m.-12:00 Noon.—Instructions in use of Tools and Equipment—Drill Masters.
12 Noon-1:00 p. m.—Lunch.
1 p. m.-2:30 p. m.—Demonstration of Dust Explosions—H. P. Dixie, Louisiana Rating & Fire Prevention Bureau.
2:30 p. m.-5:00 p. m.—Review of Instruction as given by Drill Masters.
5 p. m.-6:15 p. m.—Supper.
6:15 p. m.-8:15 p. m.—First Aid Instructions—Under Supervision of C. E. Saxon, representative of U. S. Bureau of Mines.

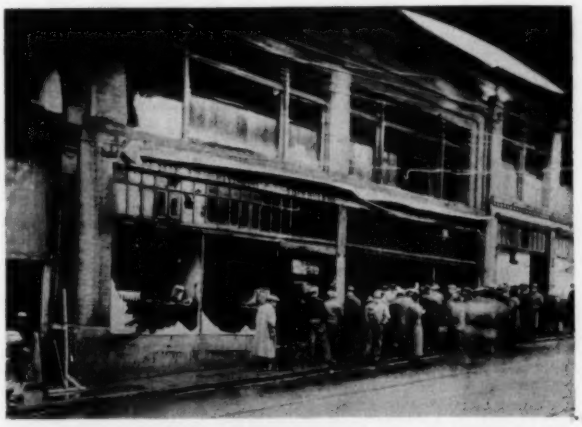
Saturday, April 21
8:30 a. m.-9:00 a. m.—Calisthenics.
9 a. m.-12:00 Noon.—Grading on Instructions as given by Drill Masters.
12 Noon-1:00 p. m.—Lunch.
1 p. m.-3:00 p. m.—Issuing of Certificates and Remarks—By Members of the Board of Supervisors.

14 Die in Lynchburg, Va., Fire

Fourteen lives were lost and seventy-five persons were injured when the Federal Transient Relief Bureau at Lynchburg, Va., was badly damaged by fire on March 24. It was the worst fire in the history of that city.

The building was opened as a lodging house and temporary home in December by the federal government. One stairway led from the apartment for white persons and one stairway from the apartment for Negroes. There were no outside fire escapes.

A cook employed by the relief administration was preparing sausage gravy for breakfast when grease boiled over and the flames leaped up to the wood ceiling. The old building made good tinder. The chef called to the night watchman to get fire extinguishers, but the door to the room containing the extinguishers was locked and the night superintendent had to be called. Flames spread rapidly under the dormitories above. One hundred men escaped onto the snow-covered streets. The injured were hurt as they jumped to the street.



Ruins of Former Furniture Store Used for Housing Transients at Lynchburg

North Reading, Mass., will install a 500-gallon booster pump on its ladder truck.

F. J. Nevins was re-elected Chief of the Fire Department at New Hamburg, N. Y., for his third consecutive term.

The March meeting of the Fire Chiefs' Club of Rhode Island was held in Providence, R. I., with Chief Frank Charlesworth of Providence presiding. Foster Lardner, a former manager of the RKO Albee Theatre in Providence entertained with tricks of magic.

Fire Department Provides Water Service

During the severe cold spell the past winter, many residents of Staten Island, part of New York City, found themselves without water when a 20-inch water main broke. A tank wagen, such as is used by the Department of Sanitation for cleaning streets, and which has been used by the New York Fire Department for fighting brush fires on the

A Resident of Staten Island Obtaining Water from the Tank Truck

island, was used to supply water service to homes without water.

Deputy Chief Spencer sent the tank car to the district affected by the break. A small pipe was fitted to the tank so that residents could fill pails and other water containers with an emergency supply until repairs could be made to the main.

CORRESPONDENCE

Correction of Pension Data

To the Editor:

In reading your article in the February issue on "Salaries Paid Firemen and Officers," I noticed that you referred to Chief H. R. MacMillan. Chief MacMillan has retired and W. G. Dowling is Chief.

The members pay three per cent to the Pension Fund, instead of one per cent as stated.

The city furnishes one uniform and cap a year, and helmets and coats when needed. Firemen buy all bunker pants, boots, caps and other parts of their uniforms if needed more than once a year.

The pay as stated is about right except for Lieutenants and Captains. These officers are paid a little higher than reported.

Yours very truly,

W. L. ALLEN,
Jacksonville, Fla.

Chief Persons, of Montpelier, Dead

Vaney B. Persons, Chief of the Montpelier, Vt., Fire Department, died while directing a two-alarm fire. He was appointed Chief in July, 1918. He was born in Calais, November 23, 1869, and spent his early life there. For the past thirty years, Chief Persons resided in Montpelier. There was a large representation of the New England Association of Fire Chiefs at the funeral.

Newly Elected Chiefs

The following have been elected to head the Fire Departments in their respective municipalities:

Aberdeen, Ida.—J. T. Dvorak
Sheldon, Ill.—P. W. Minier
Sac City, Ia.—H. F. Huser
Pierce, Neb.—Alfred Otto
Tieton, Wash.—C. H. Perle
Campbellsport, Wis.—A. J. Sukawaty
Thorp, Wis.—Joseph Yetsko

Chief Quinn of Martinsburg Dead

Martin L. Quinn, Chief of Martinsburg, W. Va., Fire Department for twenty-one years, died at his home following a heart attack. He nearly reached his fiftieth birthday.

He joined the department of January 17, 1906 and was one of the first three paid members. Two years later he resigned and became a member of the Alliance, Ohio, department. He returned to Martinsburg and was made Assistant Chief. In 1913 he was advanced to Chief. This position he held continuously until his death.

Chief Quinn was one of the organizers of the West Virginia Fire Chiefs' Association. He was completing his third consecutive term as President. In 1926 he served as President of the Cumberland Valley Volunteer Firemen's Association.

He was a graduate of the New York Fire College, and was a member of the International Association of Fire Chiefs.

Chief Quinn is survived by his widow, one daughter, one son, one brother and two sisters.

N. E. Directors Plan for Convention

A meeting of the Board of Directors, New England Association of Fire Chiefs, was held in the Hotel Statler, Boston, on March 21. Plans were discussed for the twelfth annual convention which will be held in Burlington, Vt., June 26-29. President Tierney announced that among the topics at the convention would be the following: "The Keeping of Fire Department Records" by Chief John C. Moran, Hartford, Conn.; "The Chemistry of Fires" by Chief Oliver T. Sanborn, Portland, Me.; "Radio Service for Fire Departments" by Chief Henry A. Fox, Boston, Mass.; "Fire Fighting in Small Towns" by Chief Irving Hammond, Westbrook, Mass.; and "The Uses of 1½-Inch Hose" by Chief Henry Taft, Norwich, Conn. There will also be addresses by M. Norcross Stratton, of the Division of Vocational Education of the Massachusetts Department of Education; Chief Charles H. French, Manchester, N. H.; and Ex-Assistant Chief Thomas F. Dougherty, New York. It is expected that Director Robert O. Small, of the Vocational Division of the Massachusetts Department of Education, will be a guest of the Chiefs at the convention.

Secretary O'Hearn reported the death of Ex-Chief Edward Comber, of Narragansett Pier, R. I., on March 7.

The directors and guests, following the meeting, attended the luncheon of the Fire Chiefs' Club of Massachusetts.

HARRY BELKNAP.

Lakewood Wins Grand Fire Award

Lakewood, Ohio, was named for the Grand Award in the 1933 Inter-Chamber Fire Waste Contest conducted by the National Fire Waste Council. The award will be made at the annual meeting of the Chamber of Commerce in Washington in May.

Winner of the Class I group for cities of over 500,000 population is Philadelphia. Those receiving honorable mention are Detroit, Pittsburgh, Milwaukee, San Francisco, St. Louis and Cleveland.

For the 250,000 to 500,000 group, Providence, R. I. is the winner with honorable mention given Indianapolis, Cincinnati, Rochester, N. Y., Kansas City, Mo., Memphis, Atlanta, Ga., St. Paul, Toledo, New Orleans and San Antonio.

Hartford, Conn., is the winner for the Class 3 section of 100,000 to 250,000 group. The honor cities are Grand Rapids, Mich.; Wichita, Kan.; Youngstown, O.; Tacoma, Wash.; Nashville, Tenn.; El Paso, Tex.; New Haven, Conn.; Springfield, Mass.; Ft. Worth, Tex.; Honolulu, Hawaii.

Class 4, cities from 50,000 to 100,000—winner Lakewood, Ohio. Honor cities, Pasadena, Cal.; Greensboro, N. C.; Asheville, N. C.; Savannah, Ga.; Berkeley, Cal.; Durham, N. C.; Schenectady, N. Y.; Union City, N. J.; Bethlehem, Pa; East Orange, N. J.

Class 5, cities from 20,000 to 50,000—winner, Owensboro, Ky. Honor cities, Parkersburg, W. Va.; Elyria, Ohio; Baton Rouge, La.; Mason City, Ia.; Newburgh, N. Y.; Pomona, Cal.; Muskegon, Mich.; Great Falls, Mont.; Wichita Falls, Tex.

Palo Alto, Cal., is the winner for Class 6, cities under 20,000. The honor cities are Ridgewood, N. J.; Valley City, N. D.; Albany, Ga.; Ellis, Kan.; Lafayette, La.; Billings, Mont.; Gastonia, N. C.; Hastings, Neb.; Geneva, N. Y., and Colfax, Wash.

PITTSBURGH DEPARTMENT KEPT BUSY BY TWO 5-ALARM FIRES

Fires Broke Out During Period of Severe Cold Weather—Blaze in Abandoned Plant Lasts 14 Hours—600 Alarms Sent in During February

By William E. Patterson

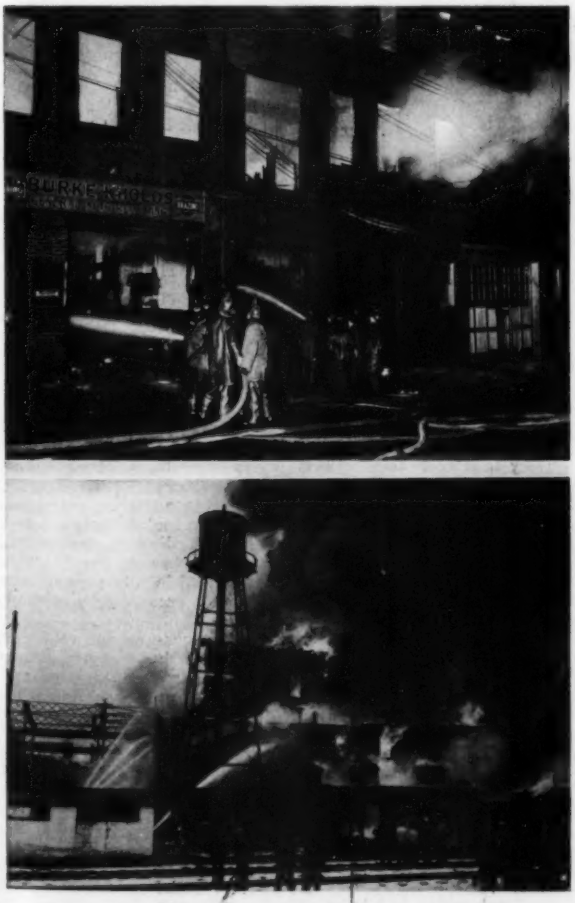
PITTSBURGH made a bad start for 1934 with a total of 413 alarms for the month of January. This number included five second alarms, one third alarm, one fourth alarm and one fifth alarm. For February there were over 600 alarms, including nine seconds, two thirds, one fourth, and one fifth alarm.

The two fifth alarm fires, which took place during the extreme cold weather, developed into very spectacular and dangerous looking fires.

The first started on Wednesday morning, January 31, about 6:40 a.m., in a two-story brick and frame planing mill and lumber yard located in a thickly populated business and residential district. Flames quickly spread to adjoining buildings, completely destroying a row of two-story brick dwellings in the rear and badly damaging others. The first alarm at 4:46 a.m., was followed by the second at 4:52 a.m., a third at 4:57, fourth at 5:11 and the fifth at 5:18 a.m. These alarms called ten Engine Companies and three Truck Companies to the scene, two Battalion Chiefs, one Deputy Chief and the Chief of Department. Ten pumper streams and two hydrant streams were used in extinguishing the fire which started from an unknown cause.

The second fifth alarm fire broke out on February 2 about 9 a.m. in a large abandoned three-story brick factory building of slow burning construction, at 35th Street and the Allegheny Valley Railroad, a large manufacturing center. The building which had been used by the Crucible Steel Company as a pottery factory, was being dismantled by workmen. All of the heavy machinery and shafting had been removed when the fire broke out in the basement.

Acetylene torches were being used by the workmen in cutting up the steel work and machinery. The fire was discovered by one of the workmen who saw smoke coming up from the basement through the heavy oil and grease soaked floor. It was but a few minutes until the building, taking up almost the entire block, was a mass of flames. The first alarm was sent in at 9:14 a.m., followed by the second at 9:22, the third at 9:24, the fourth at 9:31, the fifth at 9:36 and a special call for extra companies at 9:49 a.m. Sixteen Engine Companies, three Truck Companies, three Battalion Chiefs, one Deputy Chief and the Chief of Department responded. Fourteen pumper streams and five hydrant streams were used in extinguishing the fire which lasted fourteen hours.



Views of the Two Five-Alarm Fires in Pittsburgh, Pa.

Upper, fighting the blaze in the planing mill, lumber yard and dwellings at the rear of the mill. Lower, large abandoned factory building provides a fourteen-hour fight for the firemen.

WHAT'S BURNING?

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of March, 1934. These figures, compiled from the telegraphic reports are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Month Ending March 31	Loss in Thousands of Dollars
Hempstead, L. I., N. Y.—Cold Stream Country Club bldg	50
Walpole, Mass.—Morse business block destroyed	80
Leavenworth, Kan.—Nine army planes and one hangar	200
Columbus, Ohio—Plant of Farmers Fertilizer Co	100
Chicago, Ill.—Property on estate of Col. R. R. McCormick	150
Westerly, R. I.—Granite works of Joseph Coduri	80
Kansas City, Kan.—Wyandotte High School bldg. destroyed	280
East London, Ont.—Hunt's flour mills destroyed	400
Huntsville, Tex.—Keep Hotel destroyed	65
Philadelphia, Pa.—Paper plant of D. Schultz Co. damaged	65
Patchogue, N. Y.—Beehive dpt. store and adj. property	125
Worcester, Mass.—Hotel Pleasant destroyed	80
Montreal, Can.—Residential property in Outremont	80
Hamilton, Ont.—United Presbyterian Church destroyed	65
Melrose, Minn.—Half block of buildings destroyed	50
Cohoes, N. Y.—Garage, several trucks and automobiles	80
St. Paul, Alta.—Fifteen business establishments	70
Ida Grove, Iowa—Elevator of C. C. Crawford	50
Birmingham, Ala.—Block of business property	3,500
Cleveland, Ohio—L. & K. hotel building destroyed	50
Hamilton, Ohio—United Presbyterian Church destroyed	125
Oak, Neb.—Plant of Southern Nebraska Power & Light Co	80
Bethlehem, Pa.—Dairy of Green Pond Farms destroyed	80
Ladysmith, Wis.—Business property destroyed	50
Brockton, Mass.—Whse. of Union Furniture Co	50
Farmersville, Pa.—Dairy bldgs. on H. S. Snyder farm	80
Saginaw, Mich.—Factory of Mershon Eddy Parker Co	50
Mount Carmel, Pa.—Three business buildings destroyed	80
Escanaba, Mich.—Major Utilities bldg. destroyed	80
Laurel, Miss.—Car barn of Mississippi Power Co. destroyed	80
Wichita Falls, Tex.—Plant of Wichita Mill & Elevator Co. destroyed	400
New Iberia, La.—Plant of Redman Burlap Co. destroyed	65
Holyoke, Mass.—St. Jerome's Catholic Church destroyed	250
Plymouth, Mich.—Property of Lee Foundry & Machine Co	80
Merrillan, Wis.—Campbell Hotel destroyed	50
Lone Wolf, Okla.—School building destroyed	50
Stevens Point, Wis.—Polonia Catholic Church destroyed	100
W. Springfield, Mass.—Park Avenue School bldg	80
Souderton, Pa.—Box factory of H. I. Souder, destroyed	65
Mechanicsburg, Pa.—Factory of Eberly & Orris Mfg. Co	50
Dublin, Ga.—Ritz Theatre destroyed	50
Chicago, Ill.—Factory bldg. at 1241 Mautene Court	125
St. Joseph, Mo.—J. C. Penney Co. store destroyed	200
Dennison, Ohio—Post office bldg. destroyed	35
Slatington, Pa.—Plant of Penna. Natural Slate Blackboard Co	100
Toronto, Ont.—Lake View Mansions, destroyed	400
San Francisco, Cal.—Workshops of Good Will Industries	50
Rye Beach, N. H.—Summer home of E. H. Robbins, Parsons Pt.	50
San Francisco, Cal.—Italian banquet room of St. Francis Hotel	50
Huntington, L. I., N. Y.—Business property, New York Ave	80
Detroit, Mich.—Former plant of Briggs Mfg. Co	150
Moultrie, Ga.—Commercial Bank bldg. destroyed	80
Norfolk, Va.—Whse. of Pender Grocery Co., destroyed	80
Seattle, Wash.—Plant of Commercial Boiler Wks., destroyed	120
Fall River, Mass.—Davenport Grammar School bldg	100
Mt. Kisco, N. Y.—Dwelling of H. J. Kurrus, Fuller Park	65
Hull, Que.—Lido cabaret destroyed	65
Newport Beach, Cal.—Yacht of A. E. Freeman destroyed	50
Los Angeles, Cal.—Business property 707-711 So. Figueroa St	50
Longview, Tex.—Longview Hotel and two dwellings	170

Chief McLoughlin of Bayonne Dead

William S. McLoughlin, Chief of the Bayonne, N. J., Fire Department since 1926, died April 9 at Bayonne City Hospital at the age of fifty-two. He was a member of the old volunteer department. Chief McLoughlin had thirty years service in the department. He is survived by his widow and a son.

Michigan Chiefs Meet in Dearborn

The first anniversary meeting of the Southeastern Michigan Fire Chiefs' Association was held in Dearborn, and new officers were elected. Membership in this group is open to Chiefs, Assistant Chiefs, Battalion Chiefs and Superintendents of Machinery and Telegraph within a fifty-mile radius of the metropolitan area of Detroit. Meetings are held each month.

Following the meeting, a tour was made through Henry Ford's Greenfield Village.

The new officers are Verne Griffith, Birmingham, President; George L. Theut, Center Line, First Vice-President;

Group of Michigan Chiefs in Front of Replica of Independence Hall

In the front row from left to right are W. King, Detroit; Chief R. Mottesheard, Dearborn; Chief V. Griffith, Birmingham; Chief George Dansbury, Grosse Pte. Farms; Chief Don Post, Ferndale; Chief Gus Anselm, Wyandotte; William O. Dwyer, Detroit; Chief George Wennesheimer, Utica, and Chief A. M. Jaeger, Ecorse.

Floyd Baker, Highland Park, Second Vice-President; George Dansbury, Grosse Pointe Farms, Secretary-Treasurer.

Among those present were the following:

Chief R. Wachter, Royal Oak Township.
Chief C. F. Baker, Highland Park.
Chief August Zado, East Detroit.
Chief A. H. Miller, Ypsilanti.
Chief F. W. Kuhn, Pontiac.
Chief Adolph Fernelius, Lincoln Park.
Chief George L. Theut, Center Line.
Chief Edward Bodary, River Rouge.
Chief Charles Andrews, Ann Arbor.
Batt. Chief Ed. Rumsey, Detroit.
Chief Maybee, Melvindale.
Chief Henning, Royal Oak.
Chief L. Chauvin, Grosse Pointe Park.
Arnold Renner, Deputy State Fire Marshal.
R. Hasselbach, Highland Park.
C. B. McNulty, Milford.
E. A. Jaffray, Representative, Gamewell Company.
Chief Jesse Sharpe, Milford.
Batt. Chief F. J. Muer, Detroit.
Batt. Chief W. J. Hill, Detroit.
L. N. Hutchinson, Fire Commissioner, Dearborn.
Frank Schonhofen, Fire Commissioner, Dearborn.
R. C. Loughead, Michigan Inspection Bureau.
George W. Smith, Arson Division, Detroit.
Paxton Mendelssohn, Box 12, Detroit.
Moore Meigs, Box 12, Detroit.
Mayor Clyde M. Ford, Dearborn.
Ray Snay.
Ralph Hanly.
Henry DeClerck.
E. Ricter.
W. Zantgrbe.

New Mexico to Hold Short Course

The twelfth annual convention and short course of the New Mexico State Firemen's Association will be held in Roswell, N. M., May 28-30. Chief Chrisman and the local Chamber of Commerce are working to make the meeting a success. Because of other local events at that time, room reservations should be made as early as possible.

Miles Heads Northern Kentucky Chiefs

Edward Miles, Chief of Newport, Ky., Fire Department was elected President of the newly formed Northern Kentucky Firemen's Association at a meeting held at Southgate, Ky. The purpose of the organization is to promote mutual aid between the metropolitan communities of the northern part of the state, and for general improvement.

Gasoline Traps To Be Standardized

A committee has been formed to standardize oil and gasoline separators for installations in drains of garages and other buildings where there is a chance for the waste to enter the sewers. The committee is Subcommittee No. 9 of the Sectional Committee on the Standardization of Plumbing Equipment and was formed with the American Society of Sanitary Engineering and the American Society of Mechanical Engineers as joint sponsors.

Texas Firemen's School Takes Place July 16-19

The fifth annual Texas Firemen's Training School is to be held at the A. and M. College, College Station, Tex., from July 16 to 19, inclusive. This school, which is held under the joint auspices of the Texas Firemen's and Fire Marshals' Association and the A. and M. College, has grown in importance since its inception, and its influence in the state for the good of the fire service is increasing. While it is conducted under the supervision of the professors of the college, the actual instruction is carried on by practical firemen and students of fire prevention, who have had wide experience in their fields.

The Advisory Board of the School consists of four members from the association and three members on the staff of the college. Those desiring information as to the courses can obtain it by writing Prof. H. R. Brayton, Director, Box 119, College Station, Tex.

Chief Judson Honored by Friends

Town officials and Fire Department heads from all parts of Connecticut attended a testimonial dinner tendered to Chief Allen D. Judson, of the Stratford, Conn., Fire Department on the twenty-fifth anniversary of his appointment as head of the fire-fighting forces. Chief Judson was appointed to the department in 1894 and on March 12, 1909, was made permanent Chief.

More than 200 of Chief Judson's friends were present at the dinner held in the spacious Housatonic Lodge on the outskirts of Stratford. They presented him with $50 in silver.

Vernon S. Morehouse, Chairman of the Stratford Town Council, recalled the night when Chief Judson was appointed to his present position, and said:

"Any man who can serve the town of Stratford and remain in service for twenty-five years deserves all the praise that could be heaped upon him."

Town Manager Donald S. Sammis praised the efficiency of the department under Chief Judson and of the work for fire prevention being carried on under Judson's supervision.

THOMAS F. MAGNER.

Mistake in 'Phone Alarm Results in Loss

An instance in which the misunderstanding of a single word, transmitted in a telephone alarm of fire, resulted in delay and considerable loss is reported from Morgan City, La. The fire in question was in the Morgan City Hotel, in that city. The telephone alarm originated from that place, but was relayed by the telephone operator at the public exchange to the Fire Department. According to the fireman on duty, the operator reported the fire as at the "Morgan City Wholesale," which is the name used locally for the Morgan City Wholesale Grocery, evidently confusing it with the hotel.

After the delay caused by the unnecessary run, the Fire Department arrived at the blaze to find that the fire, fanned by a wind estimated at 25 m.p.h., had spread to the buildings adjoining the Morgan City Hotel on either side. The department of Morgan City, assisted by the Berwick Fire Department, brought the fire under control in two hours after the alarm had been received, stretching four lines and completely surrounding the fire. The loss was roughly estimated at $5,000, resulting in the total destruction of the Morgan City Hotel, the Louisiana Hotel, a double dwelling house, and a partial loss of $500 on a two story frame building.

In an effort to avoid misunderstandings over future telephone alarms, a publicity campaign is to be conducted by the city authorities and in the local newspaper, setting forth the advantages of the telegraph alarm system and advising citizens to use the boxes in preference to 'phoning alarms of fire.

Trucks for Thawing Fire Hydrants

Since the New York Fire Department no longer uses steam engines, it has purchased five one-ton International Harvester trucks equipped with gas burners for quickly thawing fire hydrants. The trucks have a two-man cab and they carry a water storage tank of 40-gallon capacity. Each unit has two fuel supply tanks of the bottle gas type, each carrying fuel for 1,500,000 B.t.u.

One of the trucks has been assigned to the Yorkville section, and the others to Washington Heights, the Bronx, Flatbush and Brooklyn.

During the severe cold weather of last winter, a number of fire hydrants were reported frozen.

Reverend Morton Guest of Chiefs' Club

The Rev. Norris T. Morton, Providence, R. I., Chaplain of the Fire Chiefs' Club of Rhode Island, was the principal speaker at the meeting of the Fire Chiefs' Club of Massachusetts which was held in the Hotel Statler, Boston, on March 21.

Chief George L. Johnson, of Waltham, Mass., attended and received a royal welcome after his severe illness. Mayor Ross, of Quincy, Mass., attended as the guest of Chief William J. Sands, of the Quincy Fire Department.

There was discussion of topics of interest to the Chiefs and a description by Rev. Mr. Morton of the Halifax, N. S., munition ship explosion which caused great damage and loss of life in the city.

HARRY BELKNAP.

Fireman Shot When Halting Motorist

Jerman J. Williams, fireman of Jacksonville, Fla., and son-in-law of Chief W. Q. Dowling, was killed by a negro bellboy at a fire. The fireman, wearing a department helmet and coat, was on duty at a fire at 5 a.m. He saw a car that the bellboy was driving, approach, and he waved a flashlight to stop him from driving over the fire hose. Instead of obeying the Negro fired three shots through the car, one of which killed Williams, and he drove away at high speed.

The Negro's defense was that he was returning from a dance. He saw the fireman but thought he was attempting a hold up. He could not explain why he carried the pistol.

Besides his widow, who at the time of the accident was at a hospital for a major operation, the fireman is survived by two children.

D. G. AID.

Birmingham Has $3,000,000 Fire

Twenty firemen and four others were injured in Birmingham, Ala., when fire broke out on March 10 in the heart of the downtown business district and calls were sent out for every fireman in the city and suburbs to help fight the blaze. Four spectators were struck by equipment or ambulances.

The fire started in the department store of Loveman, Joseph & Loeb Company, apparently from a short circuit. Thousands of Saturday afternoon shoppers jammed the streets and added to the problems of fighting the fire. The first alarm was sounded at 1 p.m. Half an hour later the flames reached five hundred gallons of lubricating oil. Every building in the block was cleared of occupants. Fire spread to nearby buildings and involved the Southern Bell Telephone and Telegraph Company. Aid was rushed from the suburban communities of Bessemer, Fairfield, Tarrant and Homewood.

The department was hampered by lack of masks to enter the smoke-filled building. Men rushed in with handkerchiefs over their eyes and noses only to be forced out within a few moments. Property loss was placed at $3,000,000.

As a result of the blaze charges were brought that the department was inefficient. Following a hearing, the City Commission by a two to one vote exonerated the Fire Department of negligence and incompetence. Several former firemen, including a Chief, testified that in fighting the fire, the basement should have been flooded.

Chief William W. Leets, of the Wildwood, N. J., Fire Department, reports a reduction of 82.2 per cent in the fire loss in his city for 1933. This good result was achieved as the outcome of house to house inspections.

Former Deputy Chief F. W. Gooderson Dead

F. W. Gooderson, who served in the New York Fire Department for fifty years and who retired in February, 1930, with the rank of Deputy Chief, died April 3 at his home in Brooklyn at the age of seventy-four.

The Late Chief F. W. Gooderson

He was born on the lower East Side of New York City. He served as a call boy on the New York Stock Exchange and later with his brother, conducted a milk route. Shortly after his twenty-first birthday, he was appointed a fireman. Three years later he was promoted to assistant foreman, now known as Lieutenant and then to foreman equivalent to the rank of Captain. In 1879 he helped to fight the first fire at which a water tower was used. He headed the list for promotion to the rank of Battalion Chief in 1897. In 1903, Chief Gooderson was third on the promotion list for the rank of Deputy Chief. His record of thirty-two years as a chief officer with twenty-six years of that time as a Deputy Chief has never been excelled.

Chief Gooderson was in charge of the 13th Division in the East New York section of Brooklyn, and later was in charge of the 10th Division in the down town area of Brooklyn. In 1932 when the Jay Street Division was abolished, he was placed in charge of the 7th Division, which covered the Bronx.

He is survived by his widow.

Martin Manager for Fabric Fire Hose

W. D. Martin, has been appointed Manager of the Baltimore, Md., office of the Fabric Fire Hose Company, Sandy Hook, Conn. This company manufactures wax and gum treated fire hose.

Cincinnati To Spend $49,000

The City Finance Committee of Cincinnati, Ohio, has voted to allot $49,000 for fire equipment, to include $27,000 for a new pumper, wagon and ladder truck, $12,000 for hydrants and $10,000 for hose.

Economies Caused by Reduced Fire Budget

John W. O'Hearn, Chief of Fire Department, Watertown, Mass., has had his annual budget of $127,260 for salaries and necessary expenses cut by the Finance Committee to $104,073. This city of 35,000 has a department of forty-seven permanent men, and seven pieces of apparatus housed in two stations. In a communication addressed to his men, Chief O'Hearn said:

"You may expect to be denied many things during the coming year that would add to your personal comfort and happiness, as well as your health and contentment, which after all are the essentials in the life of a fireman that go to make his work easier. Our reward has been a recommended cut in essentials and a continued cut in salaries. However, do not lose heart."

He urged the men to go to bed earlier at nights in order to save on heat and light at the stations, and to save on supplies by not washing floors and windows or polishing brass as frequently. By filling chemical tanks and washing apparatus at hydrants, the city saves on its water bill. The use of the pool tables will have to be discontinued if they involve any expense.

In his message, Chief O'Hearn also said:

"No more cooking of your meals in the station by department gas as the town can't afford it. Bring a cold meal with you and when indigestion overtakes you, don't blame me."

During the past year, firemen at the Central Station have improved conditions by repairing and redecorating the building.

METHODS OF FIRE FIGHTING IN UNDERGROUND WORKINGS OF MINES

Teaching of Miners in Fire Prevention, and Rescuing, Important—When a Mine on Fire Should Be Sealed and Unsealed

By P. C. Smith
Mines Rescue Engineer

WITHOUT a doubt the most hazardous mine fire to combat is one occurring in a dry, dusty bituminous coal mine, which, in burning, generates explosive gas in the fire area. Fortunately this condition does not exist in Ontario, as we have no coal mines in the province, and a fire in a metal mine is not as hazardous to combat as a fire in a coal mine; explosive gas is rarely found and explosive dust is not a factor in metal mining; the gases given off during metal mine fire however, are generally much more difficult to control because the ventilation in most of such mines is inadequate and poorly controlled.

The methods for attacking a mine fire can only be taught in a general way and no fixed rule can be laid down for the control and extinguishing of every fire; each fire is an original problem.

The principal causes briefly stated may be catalogued as follows: Open lights; smoking; defective wiring; faulty electrical installations; ignition of gas; blasting; (especially when done with black powder) incendiarism and spontaneous combustion.

Miners Taught Fire Fighting, Rescuing, Etc.

It is of course understood, that the best method to fight fires whether on the surface or underground is to prevent them by eliminating every possible hazard, and, as this is an impossible task, the Workmen's Compensation Board, the Department of Mines and the mining companies have united to produce an efficient organization with the most up-to-date equipment so that the miners can be taught the various methods of fire fighting, rescuing entrapped miners, recovering bodies and recovering the fire area after the fire has been extinguished.

Today, Ontario can boast that, while she has the youngest mine rescue organization on the American continent, it certainly is not the least efficient as more than five hundred men have been trained in the use of mine rescue apparatus.

Methods of Fighting a Mine Fire

Despite all precautions that may be taken to prevent fires, preparation should be made to fight them if and when they occur. The methods of fighting a blaze are:

(1) direct attack with water, chemicals or sand;
(2) flooding the mine or fire area;
(3) inclosing the stricken area with tight seals;
(4) pumping silt into the area and flushing same;
(5) Filling the affected area with an inert gas such as carbon dioxide.

Many mine fires are extinguished in the first or incipient stage by direct attack with water. Failure to fight the blaze successfully by this method is generally due to late discovery, a lack of water or improper attack in the initial stages. If the attempt to control fire in the incipient stage fails, one of the other methods of control is tried, with the exception of using an inert gas, as this is an expensive and often unsuccessful method. The most practical method and the one most often used is by inclosing the fire area with air-tight seals, excluding air and slowly but surely extinguishing the fire through lack of oxygen to support combustion.

Sealing a Fire in Metal Mines

Mine fires should be sealed when progress can not be made by fighting them by direct attack, or when other conditions, such as inaccessibility and dangerous conditions, make sealing necessary. In sealing a fire area in metal mines the seals should be placed as close to the fire as possible. The question of when and how to unseal mine fires is of the first importance to the mining industry as a whole. If a mistake occurs and a seal is opened too quickly the hazard to life and property is increased; and throughout the world, this practice is only too often carried out. The control of fires by sealing and the time an area should remain sealed is firmly established by experience and chemistry, with the aid of the chemist fully experienced in the analyzing of fire gases; thus a fairly accurate knowledge is obtained and the opportunity to determine the potential hazard and the best time to unseal the fire area.

When to Unseal a Mine

Scientific study and experience has shown that no attempt should be made to unseal a fire until

(1) the oxygen content of the sealed atmosphere is low enough to prevent any explosion occurring.
(2) Until Carbon monoxide, the combustion indicator has entirely disappeared, to make sure that the area has had sufficient time to cool to minimize the possibility of the fire rekindling when ventilation is resumed.

Some of the factors briefly stated that govern the time to unseal an area are:

(1) Extent and intensity of fire at time of sealing;
(2) Tightness of seals and inclosed area;
(3) Sampling and analysis of the atmosphere under seal.

The extent and intensity of the fire at the time of sealing will have a bearing upon the reduction of the oxygen in the sealed area; for example, a large amount of burning or heated material will reduce oxygen faster but will require longer time to cool; a fire that is active at the time of sealing will cause oxygen to diminish more rapidly than one that is smouldering.

Tight Seals Are Essential

Tight seals are essential for the control of oxygen. If possible they should be made of incombustible material, such as brick; concrete or tile well hitched into the floor, roof and sides of the drift. Every care must be taken when building these seals, as it is impossible to build one absolutely air-tight.

Necessity of Proper Sampling

It is of the utmost importance that proper sampling and accurate analysis be made of the atmosphere behind the seals so that they without a doubt indicate the composition of the gases present. These samples should be collected at least once every twenty-four hours for the first few days, later when the analysis shows that the stoppings are tight and the fire is controlled they can be made at longer intervals, every two or three days. Portable field apparatus may be used for the analysis, where extreme accuracy is not essential, as it should be accurate to approximately 0.20 of the per cent of the volume so tested. If greater accuracy is required, the samples should be sent to a laboratory equipped for accurate work, where analysis as close as 0.01 or 0.02 can be made.

(Excerpts from a paper read before the annual convention of the Dominion Association of Fire Chiefs, by Chief R. Mathieson, Kirkland, Ont., Can. Excerpts from the first part of this paper, treating of above-ground hazards of a mining camp, was published in the last issue.)

U. S. Bill Calls for $10,000,000

Congress is considering the Shipstead bill which authorizes the payment of about $10,000,000 in claims against the government as the outgrowth of forest fires in the northeastern part of Minnesota in 1918. The bill passed the senate and is now before the house.

It is charged that sparks from locomotives used at that time on a government-operated railroad set fire to the forests which cost the lives of about 400 persons in and about Cloquet. Victims of the fire were compelled to accept a percentage settlement in face of a threat of litigation of every claim which would be carried to the Supreme Court. The bill calls for the full payment of damages. There are about 8,000 claimants.

Ayer, Mass., Erecting Fire Station

The town of Ayer, Mass., is building a fire and police station under an appropriation of the C.W.A. It is located on Washington Street, and is to be completed about May 1.

The building is built of brick with heavy hard pine framing and concrete foundations. It is a two-door house, accommodates three pieces of apparatus and has ten police cells. There is a bell in the cupola with provisions for a whistle blowing machine.

On the ground floor is the signal apparatus. On the second floor of the fire station is a common room to house a call department. Provisions have been made on the lot for a drill school and space was left for a garage for the police department cars.

Plans for the building were drawn by George Ernest Robinson, of Boston.

CONVENTION DATES

April 12-13—WASHINGTON STATE FIRE CHIEFS' ASSOCIATION. 3rd Annual Convention, Chehalis, Wash. Secretary, Capt. W. A. Gross, Olympia, Wash.

April 13—SOUTHWEST WASHINGTON FIREMEN'S ASSOCIATION. Annual Convention, Centralia, Wash.

April 16-21—LOUISIANA SHORT COURSE IN FIREMANSHIP. 4th Short Course, Baton Rouge, La. Address, Chief R. A. Bogan, Baton Rouge, La.

April 16—FIRE CHIEFS' EMERGENCY PLAN. Monthly Meeting, Union Corners Fire House, Eastchester Township, N. Y. Secretary-Treasurer, Captain E. Riviere, Fire Headquarters, Larchmont, N. Y.

April 23-24—FLORIDA STATE FIREMEN'S ASSOCIATION. 9th Annual Convention, Marion Hotel, Ocala, Fla. Secretary, Chief F. C. Pfaender, Winter Haven, Fla.

April 25—FIRE CHIEFS EMERGENCY PLAN OF FAIRFIELD COUNTY. Regular Meeting, Springdale, Conn. Secretary-Treasurer, John Moehring, Toms Road, Stamford, Conn.

May 6—NORTHWEST FIRE SCHOOL. Regional Fire School, Fire Department Drill Yard, Brainerd, Minn. Address, H. E. Jurgensen, Minneapolis, Minn., Fire Department.

May 9—DEL-MAR-VA VOLUNTEER FIREMEN'S ASSOCIATION. 5th Annual Convention, Lewis, Del. Secretary, Fred Brown, Minquadale, Del.

May 22-25—IOWA FIRE SCHOOL. 10th Annual School, Iowa State College, Ames. In charge—Prof. L. J. Murphy, Extension Engineer.

May 24—IOWA FIRE CHIEFS' ASSOCIATION. 6th Annual Convention, Ames, Ia. Secretary-Treasurer, Chief L. R. Morris, Ames, Ia.

May 25-26—PROVINCE OF QUEBEC POLICE AND FIRE CHIEFS' ASSOCIATION. 8th Annual Fishing Party and Picnic, Lake Morgan, Que., Can. Secretary-Treasurer, Robert Harrington, Chief Fire Dept., McColl-Frontenac Oil Co., Ltd., Windsor Hotel, Montreal.

May 28-30—NEW MEXICO STATE FIREMEN'S ASSOCIATION. 12th Annual Convention and Fire College, Roswell, N. M. Secretary-Treasurer, Theodore A. Rosenwald, Albuquerque, N. M.

June—NORTH DAKOTA STATE FIREMEN'S ASSOCIATION. 50th Annual Convention, Mandan, N. Dak. (Exact date to be decided later.) Secretary, H. L. Reade, Bismarck, N. D.

June—SOUTHERN CALIFORNIA FIRE CHIEFS' CLUB. Semi-Annual Meeting, Long Beach, Cal. Secretary-Treasurer, Chief Charles E. Smith, 702 State Bldg., Los Angeles, Cal.

June 2—TENNESSEE STATE FIREMEN'S ASSOCIATION. 4th Annual Convention, Columbia, Tenn. Secretary-Treasurer, Joe J. Martin, Fire Headquarters, Nashville, Tenn.

June 4-6—SOUTHWESTERN ASSOCIATION OF FIRE CHIEFS. 7th Annual Convention, San Antonio, Tex. Secretary-Treasurer, Chief J. E. Taplin, Blackwell, Okla.

June 4-8.—SOUTH DAKOTA FIREMEN'S ASSOCIATION. 50th Annual Convention and 36th Annual Fire School, Yankton, S. D. Secretary, M. C. Sullivan, Parkston, S. D.

June 12-13—MINNESOTA STATE FIRE DEPARTMENT ASSOCIATION. 62nd Annual Convention, Hibbing, Minn. Secretary, Fred Pfaender, New Ulm, Minn.

June 12-14—OHIO STATE FIRE CHIEFS' ASSOCIATION. 17th Annual Convention, Hotel Ohio, Youngstown, Ohio. Secretary-Treasurer, Chief Philip J. Harty, Youngstown Sheet and Tube Co., Youngstown, Ohio.

June 12-14—STATE FIREMEN'S AND FIRE MARSHALS ASSOCIATION OF TEXAS. 8th Annual Meeting, Mineral Wells, Tex. Secretary, Olin Culberson, Edna, Tex.

June 13-15—WYOMING STATE FIREMEN'S ASSOCIATION. 8th Annual Convention, Wheatland, Wyo. Secretary, W. H. Mitchell, City Hall, Caspar, Wyo.

June 16—EASTERN ASSOCIATION OF FIRE CHIEFS. 7th Annual Convention, Albany, N. Y. (Probable date, subject to change.) Secretary, Chief F. E. Soulé, Coatesville, Pa.

June 16—LEBANON COUNTY FIREMEN'S ASSOCIATION. 12th Annual Convention, Myerstown, Pa. Chief Fire Marshal, A. S. Stauffer, Palmyra, Pa.

June 19-22—ILLINOIS FIRE COLLEGE. 10th Annual Fire College, of Illinois Firemen's Association, University of Illinois, Urbana, Ill. Director, Prof. L. H. Provine, University; Secretary, Assistant Chief Roy W. Alsip, Champaign, Ill., Fire Department.

June 20-21—INDIANA STATE FIRE CHIEFS' ASSOCIATION. Annual Convention, Terre Haute, Ind. Secretary, Archie McCabe, Muncie, Ind.

June 20-22—MARYLAND STATE FIREMEN'S ASSOCIATION. 42nd Annual Convention, Cambridge, Md. Secretary, George R. Lindsay, Hagerstown, Md.

June 25-27—OKLAHOMA STATE FIREMEN'S ASSOCIATION. 40th Annual Convention, Alva., Okla. Secretary-Treasurer, Charles Slemp, 820 East 19th Street, Oklahoma City, Okla.

June 26-29—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS. 12th Annual Convention, Memorial Auditorium, Burlington, Vt. Secretary-Treasurer, Chief John W. O'Hearn, Watertown, Mass.; Chairman, Exhibit Committee, Chief Daniel B. Tierney, Arlington, Mass.

June 27—CENTRAL WESTERN (OHIO) FIREMEN'S ASSOCIATION. Annual Convention, Spencerville, Ohio. Roger O'Donnell, Covington, Ohio.

July—STATE ASSOCIATION OF FIRE CHIEFS OF MAINE. Quarterly Meeting, (Exact date not yet decided), Camden, Me. Secretary-Treasurer, Charles W. Bowker, South Paris, Me.

July 2—TEMISKAMING FIREMEN'S ASSOCIATION. Annual Tournament, Rouyn, Que., Can. Secretary-Treasurer, F. E. Thompson, Box 686, New Liskeard, Ont.

July 9-11—FLORIDA FIRE COLLEGE. 5th Annual College, Daytona Beach, Fla. Chairman, J. F. MacMillan, Cocoa, Fla.

July 10-13—PROVINCE OF QUEBEC POLICE AND FIRE CHIEFS' ASSOCIATION. 2nd Annual Convention, Hotel Chateau de Blois; Manufacturers' Exhibits at Armory, Three Rivers, Que. Secretary-Treasurer, Robert N. O. Harrington, Chief, Fire Dept., McColl Frontenac Oil Co., Ltd., P. O. Box Suite 8, Windsor Hotel, Montreal, Can.

July 16-19—MICHIGAN STATE FIREMEN'S ASSOCIATION. 60th Annual Convention, and 6th Annual Fire College, Mianistique, Mich. Secretary-Treasurer, Charles V. Lane, Charlotte, Mich.

July 16-19—TEXAS FIREMEN'S TRAINING SCHOOL. 5th Annual School, A. & M. College of Texas, College Station, Tex. Director, H. R. Brayton, Box 119, College Station, Tex.

July 17-18—MARITIME FIRE CHIEFS' ASSOCIATION. 20th Annual Convention, Truro, N. S., Can. Secretary-Treasurer, K. J. MacRae, Capt., Salvage Corp., St. John, N. B.

July 19-21—MONTANA STATE FIREMEN'S ASSOCIATION. 43rd Annual Convention, Dillon, Mont. Secretary-Treasurer, D. E. Moser, Bozeman, Mont.

July 30-Aug. 2—FIRE SERVICE EXTENSION SCHOOL OF WEST VIRGINIA. 4th Annual School, West Virginia University, Morgantown, W. Va. Address, Secretary, W. Va. Fire Chiefs' Assn., Chief C. B. Powell, Romney, W. Va., or Prof. Lewis V. Carpenter, Director, School, University.

July 30-Aug. 2—WEST VIRGINIA FIRE CHIEFS' ASSOCIATION. 3rd Annual Meeting, West Virginia University, Morgantown, W. Va. Secretary, Chief C. B. Powell, Romney, W. Va.

Aug.—KENTUCKY STATE FIREMEN'S ASSOCIATION. 15th Annual Convention, Newport, Ky. (Exact date not decided.) Secretary, S. G. Rinde, 621 West Jefferson St., Louisville, Ky.

Aug.—MONTANA ANNUAL FIRE SCHOOL. 5th Annual School, Bozeman, Mont., exact date not set but probably in August. Address, Secretary-Treasurer, Montana State Firemen's Association, D. E. Moser, Bozeman, Mont.

Aug.—VERMONT STATE FIREMEN'S ASSOCIATION. 44th Annual Convention, Vergennes, Vt. Secretary-Treasurer, J. Shank, Poultney, Vermont.

Aug.—VIRGINIA STATE FIREMEN'S ASSOCIATION. 48th Annual Convention, Suffolk, Va., second week in August. Secretary, O. W. Dabney, Staunton, Va.

Aug.—VIRGINIA FIRE CHIEFS' ASSOCIATION. 6th Annual Convention, probably second week in August, Suffolk, Va. Secretary-Treasurer, Chief E. H. Rouse, Orange, Va.

Aug. 7-9—WISCONSIN PAID FIREMEN'S ASSOCIATION. 27th Annual Convention, Rhinelander, Wis. Secretary-Treasurer, William H. Schultz, Sheboygan, Wis.

Aug. 14-17—DOMINION ASSOCIATION OF FIRE CHIEFS. 26th Annual Convention, London, Ont., Can. Secretary, Chief James Armstrong, Box 56, Kingston, Ont.

Aug. 17-18—CONNECTICUT STATE FIREMEN'S ASSOCIATION. 51st Annual Convention, Waterbury, Conn. (Tentative Date—exact date not yet decided.) Secretary, D. W. Harford, South Norfolk, Conn.

Aug. 20-22—KANSAS STATE ASSOCIATION OF FIRE CHIEFS and KANSAS STATE FIREMEN'S ASSOCIATION. Respectively 18th and 47th Annual Conventions. Secretary, Chief K. D. Doyle, Wamego, Kan. Regional Fire Schools will be held as follows: Emporia, May; Pratt, June, and Hays, October.

Aug.—21-24—FIREMEN'S ASSOCIATION OF THE STATE OF NEW YORK. 62nd Annual Convention, Geneva, N. Y. Secretary, Fred A. Davis, Fort Edwards, N. Y.

Aug. 21-24—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. 62nd Annual Convention, Schroeder Hotel, Milwaukee, Wis. Secretary-Treasurer, Ex-Chief James J. Mulcahey, Yonkers, N. Y.; Chairman, Exhibit Committee, Chief Daniel B. Tierney, Arlington, Mass.

Aug. 22—MISSOURI VALLEY ASSOCIATION OF FIRE CHIEFS. Annual Convention, Schroeder Hotel, Milwaukee, Wis. (Meets second day of I. A. F. C. Convention.) Secretary-Treasurer, Chief Ray Tiller, Waterloo, Ia.

Sept.—ARKANSAS STATE FIREMEN'S ASSOCIATION. 13th Annual Convention, Monticello, Ark. (Exact date to be decided later.) Secretary-Treasurer, H. D. Compton, Central Fire Station, Little Rock, Ark.

Sept. 4-6—MARYLAND SHORT COURSE FOR VOLUNTEER FIREMEN. 5th Annual Short Course, University of Maryland, College Park, Md. Dean A. N. Johnson, College of Engineering, University.

Sept. 17-20—CALIFORNIA STATE FIREMEN'S ASSOCIATION. 12th Annual Convention, Santa Cruz, Cal., Secretary-Treasurer, H. E. Strasser, 1171 Tenth Ave., San Diego, Cal.

Sept. 18-19—DELAWARE VOLUNTEER FIREMEN'S ASSOCIATION. 14th Annual Convention, Harrington, Del. Secretary, Sam H. Carson, Dover, Del.

Sept. 18-19—IOWA FIREMEN'S ASSOCIATION. 57th Annual Convention, Creston, Ia. Secretary, Paul A. Soener, Independence, Ia.

Sept. 21-22—NEW JERSEY STATE FIREMEN'S ASSOCIATION. 57th Annual Convention, Atlantic City, N. J. (Tentative date. Exact date to be decided later.) Secretary, Evan F. Beners, Moorestown, N. J.

Oct. 1—TEMISKAMING FIREMEN'S ASSOCIATION. 19th Annual Convention, Rouyn, Que., Can. Secretary-Treasurer, F. E. Thompson, Box 686, New Liskeard, Ont.

Oct. 2-4—PENNSYLVANIA STATE FIREMEN'S ASSOCIATION. 55th Annual Convention, Hotel Neff, Sunbury, Pa. Secretary, Charles E. Clark, Wayne, Pa.

Oct. 16-18—ILLINOIS STATE FIREMEN'S ASSOCIATION. 48th Annual Convention, Granite City, Ill. Secretary, Assistant Chief Roy W. Alsip, Fire Department, Champaign, Ill.

Ex-Chief Dougherty Speaks in Boston

There was a large attendance at the meeting of the Box 52 Association held on the evening of March 21 in the Boston Chamber of Commerce. The speakers were P. Hildreth Parker on "A Suggested Scheme for Mutual Aid in New England Fire Departments"; Ex-Assistant Chief Thomas F. Dougherty, of New York, N. Y., on "Some Hazards Encountered in Fire Fighting"; and Harold Walker, of the National Fire Protection Association, on "Fire Losses and Their Causes."

Among those present were Chief Selden R. Allen, Brookline, Mass., President of the International Association of Fire Chiefs; Chief George L. Johnson, Waltham, Mass.; Chief William H. Hill, Belmont, Mass.; Supt. George H. Bowen, of the Boston Automatic Fire Alarm Company; and Deputy Chief Walter M. McLean, of the Boston Fire Department.

HARRY BELKNAP.

Winchendon, Mass., has voted to spend $7,000 for a combination motor pumping engine.

PROPOSED IMPROVEMENTS

Salesman Wanted

Wanted experienced salesman to sell motor fire apparatus. Give full particulars as to yourself and experience. Address: Box 725, c/o FIRE ENGINEERING, 24 W. 40th St., New York City.
4

Dealers Wanted

Experienced dealers to sell Ward LaFrance fire apparatus in Pennsylvania, Ohio and New England States. Give experience. Ward LaFrance Truck Corp., Elmira, N. Y.
4

Chelsea, Mass.—Board of Aldermen approved order for new fire alarm headquarters building at estimated cost of $80,000.

Grand Rapids, Mich.—Fire Marshal Boughner requested that an appriation be made in 1934-35 to amount of $13,000 for purchase of new pumper for fire department.

Epsom, N. H.—At joint meeting of Board of Selectmen and fire department officers purchase of a pumper was authorized. Clarence E. Bartlett, Chief.

Rochester, N. H.—Council pased resolution authorizing $7,500 for purchase of new fire truck equipped with booster tank.

Pratt, Kan.—Movement under way to purchase new fire truck, according to reports.

Portable Tank for Fighting Fires

A ventilated form fitting tank which permits a constant flow of air to pass between the water tank and the back of the carrier, is provided in the Smith Indian Fire Pump manufactured by D. B. Smith & Co., Utica, N. Y. With this new feature, the cold water temperature is avoided and colds among the men carrying the tank avoided. The portable apparatus has proven valuable in fighting brush and grass fires such as are common during the spring season.

Work of Kansas City Patrol Praised

The work of William H. Gardner, Chief of Patrols, and the Kansas City, Mo., Underwriters' Salvage Corps was praised by Harry T. Cartlidge, Chairman of the Committee on Fire Prevention and Engineering Standards, National Board of Fire Underwriters, and W. E. Mallalieu, General Manager, on their inspection trip to that city. The first aid kits carried by the patrol were used during the year on 175 persons before the arrival of physicians or ambulances.

Fire Department Backs Safety Drive

Chief Charles J. Brennan of the San Francisco Fire Department distributed copies of simplified driving rules, and safety stickers to be pasted on the motorized fire equipment. The officers and men of the department will cooperate with a local newspaper in furthering the "no accident" drive.

Chief Brennan appealed to the public to help firemen avoid the fatal crashes that are the result of traffic violations. He pointed out that many automobile drivers fail to draw up to the curb and stop when they hear fire apparatus approaching.

Seattle Firemen Win Pay Suit

The validity of an initiative ordinance adopted at the 1924 election fixing salaries of firemen and policemen was upheld by a Supreme Court decision which held further that waivers of salaries by public officers were against public policy and therefore of no force and effect.

A former fireman brought action to collect the difference between the salary fixed by the ordinance and that actually paid him under a form of waiver which he signed under protest.

The decision stated that, "The charter of the City of Seattle, taken as a whole, must be held to mean that a referendum ordinance cannot be altered, amended or repealed by any less authority than that which called it into being; and that, therefore, the 1933 salary ordinance reducing the salaries of firemen passed by the Council without referring it to the voters was illegal."

The decision is considered a heavy blow to the Mayor's economy program as each member of the department is entitled to a salary adjustment of $500 to $800 for the back period.

Cincinnati, Ohio, is confronted with the problem of whether it should purchase a piston type pumper or one of centrifugal design. City Manager Dykstra explained to the Ahrens-Fox Fire Engine Company that it would like to give its contracts to a local firm, if possible.

Hoboken Buys New Fire Apparatus

The City Commission of Hoboken, N. J., has placed an order with the Ahrens-Fox Fire Engine Company, Cincinnati, Ohio, for eight pieces of apparatus. The order was placed on the recommendation of Chief John J. Gilday and is financed by a $90,000 bond issue. The order calls for five 1,000-gallon triple combination pumpers, and three hose and booster wagons, to be delivered within two months.

District of Louisiana Firemen Meet

Fifty Chiefs attended a meeting of the Fourth District, Louisiana State Firemen's Association held at Lafayette. District Vice-President Ditch presided at the meeting. Those who spoke at the meeting included Chief R. A. Bogan, of Baton Rouge, President of the state association; Walter K. Grant and Randolph Church, of the Louisiana Rating Bureau; F. V. Mouton, Louisiana Insurance Commission; Chief Perres, Rayne; Chief J. W. Miles, Crowley; J. Ferdinand Hebert, Plaquemine, and Alex Robertson, Opelousas. E. V. Johnson, of Welsh, was appointed District Assistant Secretary.

Exhaust Gas Generates Fire Foam

The exhaust gas of the fire apparatus motor is used by Merryweather & Sons, England, to generate fire foam in conjunction with a portable generator termed the "Xaust-Suds" generator.

The device consists of a small electrically driven pump which can be operated from the electric circuit of the motor. The water inlet of the generator has a shut-off valve. A short length of flexible metal tube connects the exhaust gas pipe of the automobile to the gas inlet of the generator.

Water from the hydrant is led into an hour-glass shaped chamber. At the throat, the exhaust gas is mixed with the foam solution injected by a small electrically driven pump. After passing the narrow throat, the mixture of water, exhaust gas and foam solution passes out into the hose in the form of foam. The manufacturers claim that the cost of operating this device is one-tenth that of a generator using powders. The density of the foam can be varied by changing the speed of the electric motor.

Regional Fire School at Brainerd, Minn.

A regional fire school is to be held at Brainerd, Minn., on Sunday, May 6, commencing at 9 a.m., and continuing throughout the day. This school is to be under the supervision of H. E. Jurgenson, formerly Fire Department Instructor of the Iowa Insurance Service Bureau, and now with the Minneapolis Fire Department, and will be under the joint auspices of the Northwest Fire School, the Cayuna Range Firemen's Association and the Brainerd Fire Department.

Members of the Brainerd department, acting as a squad, will demonstrate the evolutions as listed in the program, and will act as instructors those in attendance at the school.

The program is as follows:

8:30-9 a. m.—Registration.
9—Assembly, aims, and purpose of the school.
9:30—Ladder demonstrations, extension, straight, roof. Importance and care of ladders. Questions.
10—Fighting basement fires, demonstrating cellar pipes, questions.
10:30—Hose lines, hose up inside stairway, hose up ladders, hauling hose lines up with rope, use of 1½" hose. Questions.
11:30—Hydraulics and pumps. Questions.
1:30—Gas and smoke mask demonstration. Adjustment, use and care. Anyone desiring may enter smoke room with instructor using masks. (A clean smoke that will not blacken you, will be used.)
2:30—Fire wall protection and exposure covering.
3—Demonstration salvage covers, salvage tools. Questions.
3:30—Hose testing and care of hose. Questions.
4—Demonstration rope work, knots. Time permitting, we will endeavor to give some first aid, and take care of any miscellaneous subjects you may have.

Stoneham, Mass., has voted to spend $8,000 for a new fire alarm system.

Milton, Mass., appropriated $9,800 for purchase of a new motor pumping engine.

Chief Locher of Springfield, Ohio, who has been confined to a hospital for three months, has had the ends of three ribs removed. He has been in service for thirty-five years and Chief for ten years.

Dressy Uniform Shirts

Made of medium blue Tub Test (fast-color) chambray or navy blue Tub Test percale; with collar attached or with two detachable laundered collars to match. This SIGNAL, now specified by Fire Chiefs all over the country, is favored because it is both dressy and practical.

If your Dealer Cannot Supply, write for prices direct.

JOHN RISSMAN & SON
SIGNAL SHIRT DIVISION
CHICAGO

QUALITY FIRST — Signal — UNION MADE

REG. U.S. PAT. OFF.

save with **Shuredry** SALVAGE COVERS

CHIEF BEARD
Columbia, Tenn.

We have been using Shuredry Covers for some time and I think they are one of the greatest things used in connection with the Fire Department. When I need any more it will be Shuredry Salvage Covers.

W. F. Beard

75% of the nation's annual half-billion-dollar fire loss is traceable to Water Damage. Shuredry Salvage Covers give you your big opportunity to better your record.

Write today for interesting data and samples and prices.

Reduce WATER DAMAGE & INSURANCE RATES

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Manufacturers Since 1870
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INVESTIGATE *the* ADVANTAGES *of the* INDIAN

COMBINATION BRASS NOZZLE FOR 30 FOOT STREAM OR LONG COARSE SPRAY
COMBINATION BRASS HANDLE FOR CARRYING TANK AND FOR HOLDING PUMP
HEAVY CAST BRASS QUICK OPENING WATER TIGHT FILLER CAP WITH REMOVABLE BRASS STRAINER CAP HAS UNION CHAIN TO PREVENT LOSING
EXTRA HEAVY TANK HAS SOLID BRASS BOTTOM. ALL JOINTS LOCKED AND SOLDERED. DUELY STRONG.

PATENTED

FORM-FITTING. VENTILATED TANK GIVES A CONSTANT CIRCULATION OF AIR BETWEEN TANK AND CARRIER'S BACK. IT PROTECTS THE BACK FROM THE COLD WATER AND MOISTURE IN THE TANK AND KEEPS THE BACK WARM AND DRY. THE FORM-FITTING SHAPE OF THIS TANK FITS THE BACK PERFECTLY, SNUG AND FIRM AND FEELS GOOD.

The spring—with its grass, rubbish and brush fires, is almost here. Are you fully prepared to fight these nuisances? Have you a supply of strong, always reliable INDIAN FIRE PUMPS on hand? If you have there's nothing to worry about—but if not, NOW is the time to find out more about these 5 gallon extinguishers that use only clear water and are so popular with rural and city departments everywhere.

Ready for action. Note freedom of arms.

Truck Carrying Rack

Carrying rack of unbreakable malleable iron which bolts to running board or floor of truck makes outfit complete. Straps hold pump in place. Heavy, black japanned buckle instantly locked or unfastened.

The ventilated tank keeps operator's back warm and dry, preventing dampness and resulting colds and sickness. No chemicals are needed when you use INDIANS—think of the economy! Plain water does the trick. Write today for full details and prices.

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If I Knew Anything Better To Do—

The past year or two we Americans looked backward. All our old financial and political machinery was geared to pull us out of the depression by the same door through which we entered. We thought it simply a case of going back the way we came. It failed. We now realize that the way out is WORK, forward and through it.

As we look to what's coming we grow less and less concerned with what is behind us.

The best thing we can do for the Country is to keep our prices fair—to give you REAL VALUE. We like sales, but square dealings and the confidence of our customers are desirable too. If we knew anything better to do, I would do it!

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We Are Always Ready to Give You Service ★ Telegraph at Our Expense

There is a telegraph wire direct from your town to W. S. Darley & Co., Chicago. We have a fully equipped Telegraph Office and operators to receive your messages day or night. This service is FREE to our customers and there is NO CHARGE for it. Send your telegrams "CHARGES COLLECT," it will be O.K.

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In a few minutes the Teletype Telegraph receiver in our office clicks off and prints the message for our telegraph operators and your order is immediately entered.

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CENTRIFUGAL TYPE

LARGE capacities at high pressures. Pumps clean or dirty water. Used with any standard commercial truck; front mounted. Big saving in cost. Passed Underwriters' 12-hour tests. Sizes for every need. Write for Bulletin.

American Steam Pump Company
Battle Creek, Mich.

ELECTRIC LIGHTS FOR FIRE FIGHTING

ONAN PORTABLE ELECTRIC LIGHTS generate ALTERNATING CURRENT—the same electricity as supplied by city lines. OPERATE HIGH POWERED ELECTRIC FLOOD LIGHTS AND SEARCH LIGHTS bringing GOOD LIGHT AND SAFETY TO NIGHT FIRE FIGHTING.

Portable Models

Weight only a little over 100 pounds. Can be carried on running board, or hung under ladders. Bring BRIGHT LIGHT wherever installed. Sizes 300 to 10,000 watts.

Write for details.

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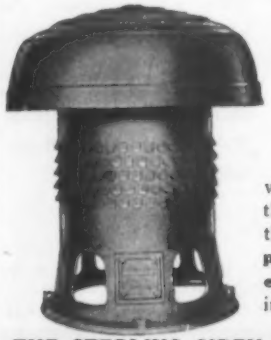

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Respond!

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BROWDER LIFE NET

ABSOLUTELY SAFE AND RELIABLE

The only net that will stay taut. It will not slacken when shifting to catch a person.

Write for descriptive literature

THE CORY-PATERSON MFG. CO.
GREENFIELD, OHIO

Hutson Addresses Fire Chiefs' Emergency Plan

An adjourned meeting of the Fire Chiefs' Emergency Plan was held at Fire Headquarters, White Plains, N. Y., on the evening of Monday, March 19. The February meeting of the Plan was postponed, on account of a heavy snow storm, and was combined with the March meeting on the above date. Monday was chosen as being more convenient to the entertaining department and the speaker of the evening. There was a large attendance of Chiefs and other Fire Department officers.

The meeting was opened by President Sullivan, who called upon Mayor Smith and Fire Commissioner Gennerick, of White Plains to welcome the members. Three new members were elected to the Plan. The President asked the members to stand a moment in silence in tribute to the memory of Fire Commissioner Murray, of Eastchester Township, recently deceased, and the Secretary was instructed to send a letter of condolence to Mr. Murray's family. It was suggested that "Key Members" be appointed to represent districts of the Plan, so that the notification of members in case of sickness or death of anyone connected with the body, change of meeting dates, or any other matter of importance could be more easily accomplished.

The speaker of the evening was A. C. Hutson, Assistant Chief Engineer, National Board of Fire Underwriters. Originally, H. E. Newell, Engineer of the Board, was to have spoken, but, owing to sickness in the latter's family, Mr. Hutson took his place at the last moment.

Mr. Hutson chose for his subject Hazards of Gases and Inflammable Materials. He emphasized the various flash points of gasoline, kerosene, turpentine, alcohol, oils, etc. He pointed out that there was a difference between the ignition point and the flash point in some materials. A new and serious hazard from the fire-fighting standpoint is the use of compressed natural gas in automobiles, becoming quite common in some portions of the country. Heat should be kept away from chemicals stored in containers, as such heat is apt to expand the gas and rupture the containers. Fires in inflammable and gas producing materials should be fought before their occurrence—in other words, prevention is the most important feature in controlling such hazards. A proper knowledge of the properties of these materials and how to handle them will prevent most of the fires and casualties in them. Mr. Hutson suggested that the members send to the Kinetic Chemical Company, of Wilmington, Del., for a series of pamphlets on the handling of liquids and inflammables, as these would be of great advantage in fire fighting and prevention.

At the close of his address, Mr. Hutson was elected an honorary life member of the Plan. Following a question by Mr. Hutson as to what had been done in the matter of zoning, there was considerable discussion on the subject. Captain Dawkins said that Ex-Chief Wooley, as Chairman of the Committee of Ways and Means, had a very exhaustive report on zoning. He had hoped that the committee report would have been presented, but owing to the absence of Chief Wooley, the report would have to go over to the next meeting. He promised that the report when presented would cover the subject of zoning very exhaustively.

The Chairman announced as the Nominating Committee Chiefs Griffen, Chambers, Gibson, Grabb and Towle, and as the Annual Dinner Commitee, Chiefs Steuhl, McCullough and Eggleston, with power to add to their number. On motion, the members of the Fairfield County Fire Chiefs' Emergency Plan were invited to join the parent organization in the annual dinner, to be held in May.

Addresses were made by Fire Commissioner Charles Jahne, and Assistant Chief W. E. Bell, of Pleasantville, N. Y., new members.

The next meeting, on invitation of Chief Steuhl, was scheduled for April 18 at Union Corners Fire House, Eastchester Township, N. Y. Refreshments were served and an entertainment given by the White Plains Department at the close of the meeting.

Fred Reief, Chief of the Prescott, Ariz., Fire Department, died on January 29, 1934. He was State Vice-President of the International Association of Fire Chiefs.

Homer J. McCormack, Acting Captain, Santa Ana, Cal., Fire Department, and a member of the department for nearly ten years, died while sleeping at the Cypress Street fire station. He was thirty-eight years old. Large delegations from Long Beach, Huntington Park and nearby places attended the funeral. He is survived by his widow and two sisters.

Chief J. N. Sullivan Upheld

Seven lives were lost in a hotel fire which occurred February 26 in the Italian quarter of Utica, N. Y.

For some hours after the tragedy criticism was aimed at the rescue efforts of the firemen, and Supervisor Thomas Ruggiero publicly demanded the resignation of the Chief of the Fire Department and of the Commissioner of Public Safety.

An inquest before two Coroners resulted. Facts brought out by witnesses were that there was a delay of possibly ten minutes before the alarm was sent to the Fire Department by persons at the scene, and that there was no justification for the charge of lack of prompt response or inefficiency on the part of the Fire Department. It was further shown that two of the victims might have been saved had

Marrone Hotel, Where Seven Lives Were Lost

they left the building at first warning, but lost their lives because they remained in to get their clothing.

The hotel building was a four-story frame structure with only one stairway and with a fire escape on the front of the building. One of the tenants who died a few days after the fire said that he has lived in the building two years and never knew any other exit existed but the rear stairway.

Upon arrival, the firemen found the entire rear of the building involved in flames and the stairway burned away. Attempts to get in and rescue tenants were delayed because of excessive heat and fumes but desperate efforts were made by the firemen to reach the trapped men, one of whom was taken out alive, only to succumb later.

Accepting Chief Joseph N. Sullivan's defense of his Department, the Common Council authorized him to make a survey of Department equipment and make application for any fire apparatus or rescue equipment which the department could use to promote greater efficiency and to facilitate rescue work.

PWA Allots $460,000 to San Francisco

The Public Works Administration has alloted a grant of $460,000 to San Francisco for extension of the city's high pressure fire protection mains in nine districts, and the construction of twenty underground cisterns to serve as emergency water supply sources should both the domestic and high pressure system fail. The estimated cost of this project is $2,000,000. A year will be required to complete the work, and an average of 450 men will be given employment during that length of time.

Keene, N. H., is seeking an appropriation for the purchase of a 600-gallon pumper. The need for new apparatus has been stressed by Chief Eugene B. Riley.

Talks on fire subjects have been arranged by William Paul Babcock, in his series "The Column of Fire," through Station WGNY. Talks have been given by Judge Tompkins, Chris Noll and David Leerburger. On April 24, Deputy Chief C. M. Fales of Haverstraw, N. Y., will speak on 'Selling the Fire Department to the Community."

Chief Beckerle of Danbury Retired

Chief Peter F. Beckerle, of the Danbury, Conn., Fire Department and one of the best known fire fighters in New England, was retired on a pension of half pay on March 13 after rounding out fifty-four years as a member of the department and eighteen years as Chief. His successor has not been named. Assistant Chief John Ireland is in temporary charge of the department.

Ex-Chief P. F. Beckerle

During the fifty-four years that he has served as a fireman, Chief Beckerle has not missed a single fire that has occurred in his city. Chief Beckerle entered the Danbury Fire Department as a volunteer on May 1, 1881. His first duty was as foreman. In 1893 when he was named Assistant Chief of the department.

On May 1, 1916, Chief Beckerle was promoted as Chief of Department, succeeding the late Thomas A. Lounsbury, who was placed on the pension list. Under his direction the Danbury department was one of the first departments to become completely motorized. The National Board of Fire Underwriters has complimented Chief Beckerle many times for his efficiency and splendid record.

In 1916 the Danbury department numbered but twelve paid men. One of the most forward steps taken by the veteran Chief was the installation of the two-platoon system. Chief Beckerle was also instrumental in securing four wage increases for the department, placing his men on an equal basis with other departments in Connecticut.

THOMAS F. MAGNER.

Fairfield County Plan Discusses First Aid

The subject of First Aid to the Injured was featured at the regular monthly meeting of the Fairfield County, Conn., Fire Chiefs' Plan, which was held the Trumbull School, Trumbull, Conn., on the evening of March 28. This meeting covered February and March, as there was no meeting in the previous month, owing to severe winter weather.

The meeting was presided over by Chief Victor Veit, Stamford Fire Department, President of the Plan. He called upon Second Selectman Alfred Guion of Trumbull and Stephen Kascak, President of the Firemen's Association of Trumbull, who welcomed the visiting firemen to Trumbull.

The Secretary reported that he had received a letter from the State Comptroller and the 1933 Connecticut Insurance Report, which showed that the State of Connecticut received $195,238.25 during the past year for taxes on Premium Receipts. A committee consisting of Chief Albert Anderson, Assistant Chief Bernard Scully and Chief Sydney Stapely was appointed by President Veit to look into the matter.

A letter of sympathy was voted sent to Chief George Bogardus, of Norwalk, who is ill. Chief F. R. Gisborne of Old Greenwich reported progress on the matter of a uniform oil burner code for Fairfield County.

An invitation of the Westchester Chiefs' Plan to unite in a joint dinner to be held sometime in May, was accepted by the meeting and the President appointed Chief Harry Askew, Assistant Chief Scully and Assistant Chief Potter to act on this committee, jointly with three members from the Westchester Plan.

A Nominating Committee to nominate officers for the coming year was also appointed and consists of Chiefs Thomas Burns, Sydney Stapely, W. M. Sherwood, Horace Walker and Thomas Boyle.

The principal speaker of the evening was James S. Stevens, of Greenwich, who gave a most interesting talk. He gave many first aid hints regarding the proper thing to do, for persons who had been hurt in any way. He explained what to do for persons who had lacerated arteries, scalp wounds, fractured bones, or eye injuries, as well as those who had been burned or were unconscious. He described burns as first, second and third degree, and cautioned those applying first aid never to be too anxious in ripping clothes from victims who had been badly burned, advising them to cut around the burns, soaking the clothes in oils, before pulling them from the body. He also explained ways to prevent infections, as well as "Don'ts" for those who were giving stimulants to unconscious victims.

On an invitation of Chief Daniel Knickerbocker, the next meeting of the Plan will be held in Springdale, Conn., on Wednesday evening, April 25.

Cambridge Dedicates New Fire House

The new firehouse at the junction of Broadway, Cambridge, and Quincy Streets in the Harvard Square section of Cambridge, Mass., was officially dedicated on February 25. There was a concert by the Cambridge American Legion Band and a public inspection of the house.

Mayor Richard M. Russell sounded an alarm from Box 48 across the street from the new firehouse and this brought to the scene by special assignment Engine Company No. 1, Ladder Company No. 1, Rescue Company No. 1, and the lighting plant, all of which are to be quartered in the house. Addresses were made by Mayor Russell, Chief Cutler L. Vose, and Richard J. Roche, of the City Council.

The building was erected at a cost of $162,000 and contains three dormitories, large recreation room, library, study hall, rooms for officers, locker rooms, separate toilets and showers for officers and men, and offices for the Chief and Deputy Chief. There is also a large kitchenette. A separate wing of the building is being fitted up as fire alarm headquarters with new Gamewell equipment. The Sturgis Associates were the architects and the Dolan Company the builders.

Among those at the dedication were Chief Thomas Qualey, Medford; Chief William J. Dooling and Deputy Chief Miller, Malden; Chief Manuel Miguel, Manchester; Chief William J. Sands, Quincy; Chief William H. Hill, Belmont; Deputy Chief William J. Quigley, District Chief James Sheehan, and Capt. John Williams, Boston; Captain Matthew J. Nolan, Brookline; P. C. Charnock, the New England Insurance Exchange; and P. Hildreth Parker, of the Box 52 Association.

Crittenden Chief of Haverhill, Mass.

Rufus A. Crittenden, Acting Chief of the Haverhill, Mass., Fire Department since December 1, 1933, was made head of the department on March 6.

Chief Crittenden was born December 10, 1881, in Haverhill and has been a member of the service for thirty-one years. He joined the force as a substitute call man on May 1, 1902, and was assigned to the Court Street Engine House. He was appointed a permanent fireman on January 15, 1906. On July 1, 1907, he was transferred to the Essex Street Fire Station as driver of the aerial hook and ladder truck and on April 15, 1910, was the driver of the first piece of motor apparatus in the Haverhill Fire Department.

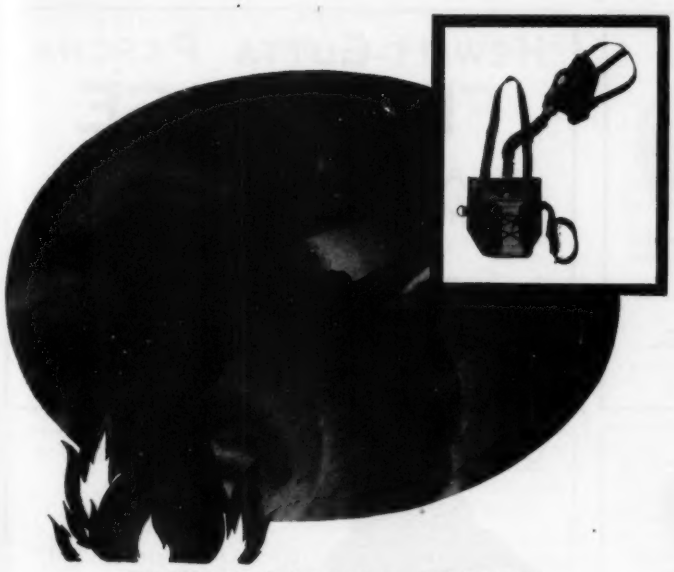
Chief Rufus A. Crittenden

He was promoted to Lieutenant in 1915; on February 1, 1917, he was advanced to the rank of Captain; he was promoted to District Chief on May 22, 1923, and was made Deputy Chief on November 1, 1931.

He suffered a broken leg at the Academy of Music fire on January 20, 1912, and had a narrow escape from death. He was a noted athlete in his younger days and an outstanding football player.

Chief Crittenden is married and lives at 567 Main Street, Haverhill. He is a member of the Massachusetts State Firemen's Association, the Massachusetts Permanent Firemen's Association, the Haverhill lodge, Knights of Pythias, and the Fire Chiefs' Club of Massachusetts.

HARRY BELKNAP.



INDUSTRIAL FIRES
that KILL *men*
but do not burn them

"The gases from all types of fires investigated contain toxic constituents in sufficient amount to make breathing the gases dangerous or even fatal in a relatively short period."

"Gases from Thermal Decomposition of Common Combustible Materials"—Industrial Engineering Chemistry, June 1933

BURRELL
all service
GAS MASKS

—the *only* canister-type masks officially approved by the United States Government for combinations of carbon monoxide and other gases. Burrell Masks protect your workmen from *all* poisonous gases, smoke or fumes . . . Wherever combustible materials are present, be sure that *your* safety measures include an adequate supply of Burrell All-Service Gas Masks.

● *An appalling fact: 10,000 are killed annually in United States fires, but a large percentage succomb to gases,—not to flames. Recently, scientists investigated the gases resulting from the combustion of common industrial materials. A reprint of their findings, and a Burrell All-Service Mask Bulletin will be sent you on request. Ask for Reprint NS-1.*

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BRADDOCK, THOMAS AND MEADE STREETS, PITTSBURGH, PA.

District Representatives in Principal Cities

MSA Equipment includes Breathing Apparatus . . . Inhalators . . . Masks of all Types . . . Gas Indicators . . . Eye and Head Protectors . . . Edison Electric Cap Lamps . . . Safety Clothing . . . First Aid Equipment . . . Descriptive Bulletins will be sent upon request.

AFTER all, a good badge is a sensible investment. Not everyone can wear a fireman's emblem of service. You men who have devoted your lives to saving life and property should be proud of your badge.

You will be if you wear a BRAXMAR BADGE. Over fifty-five years of experience goes into every badge you buy.

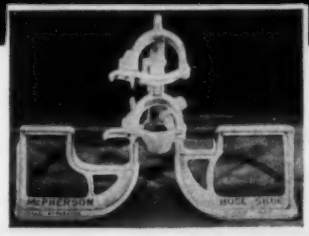
Catalog on request.

C. G. BRAXMAR CO., 242 West 55th Street, New York

BRAXMAR BADGES

Standard for Over Fifty Years

McPHERSON
FIRE HOSE SHOE



Does the job of a Turret—

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If your needs call for a deck gun, a deluge set or a turret nozzle and your budget can't comfortably stand the price of these items, we suggest you get the dope on this new fire hose shoe. It actually takes the place of other high priced equipment and does just as fine a job.

It converts back pressure into down pressure, prevents backlash, stands on its own feet and takes all the pressure your hose will stand. Why subject your men to punishment when this hose shoe can be left standing in the tough spots.

Write for full information—now.

GENERAL APPARATUS CORP.

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We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

Bi-Lateral Fire Hose

The one hose that does not require frequent replacements. Always reliable for fire service no matter how old, if the jackets are intact.
Lined with three rubber tubes, specifically guaranteed for six years.

BI-LATERAL FIRE HOSE CO.

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HEWITT-GUTTA PERCHA FIRE HOSE

A complete line, including
Wax Treated - Solid Multiple Woven
AND
Single and Double Jacket Hose
Manufactured by
HEWITT RUBBER CORPORATION
BUFFALO, N. Y.
"Territories Available"

COVER'S NOD and SHAKE GAS MASK

Carry It in Pocket. Slip on in a Jiffy. Positive Protection to Eyes Against Smoke. Safe in Fumes.

Price $48 per Dozen

Upon receipt of $4.00 one will be forwarded as a sample, postpaid.

H. S. COVER
Station A
SOUTH BEND, IND.

COMFORT AND SECURITY WITH THE CAIRNS LOW HEAD—CUSHION LINED HELMET

COMFORTABLE AS YOUR OLD FELT HAT; WON'T SHAKE OFF

Never go to a fire without the protection of a good helmet. It may save your life.

Now is the time to start a new Fire Record Book. 3 sizes. 350-700-1400 alarms.

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444 LAFAYETTE STREET - Established 1836 - NEW YORK
HELMETS — CAPS — BADGES, RUBBER COATS, ETC.

EDDY Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

Write for the Facts

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Here I is suh! SAMBO *Puts Out* CHIMNEY FIRES *Quickly*

We will send an initial order of 3 doz. boxes of SAMBO and bill you $15. You can pay in 30 days.

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NORWALK, CONN.

Give the other fellow a lift—

PERHAPS you know of another fellow in your fire company or volunteer department who is anxious to know more about the science of fire fighting.

If you do, why not give him a big lift by having him subscribe to and read FIRE ENGINEERING? Nearly everyone who has reached the top rung in fire service reads it regularly.

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24 W. 40th Street — New York

SUGGESTIONS FOR PAINTING AND MARKING FIRE HYDRANTS

The Committee on Hydrant Markings of the New England Water Works Association Submits Report and Its Chairman Comments Thereon

By Harry U. Fuller

Chief Engineer, Portland, Me., Water District and Chairman of Committee

SOME question has been raised as to the amount of information that it is proper to attempt to convey by marking hydrants. Of course it is desirable to convey all the information possible, but it is not desirable to convey misinformation. What should be done is controlled by the degree of accuracy of the information conveyed. If the hydrants are marked as suggested in the report the information is not perfectly accurate because the number of nearby hydrants being used affects the results.

It has been suggested that hydrants be tested in groups instead of singly, but if that were done there is no standard of how many to use or which ones to use. One of the advantages of testing the hydrants singly is that the tests can be repeated at intervals and the effect of improvements to the system can be learned as well as reduced capacity due to the age of the pipes.

It has been suggested that the size of the main be painted on the hydrant, but if the hydrant were on a six-inch main the supply might be one fire stream or six, depending on the length of six-inch supply. That information would be no help.

Another suggestion has been made that more colors or more figures be used to represent small differences in quantity. I shall call that an unreasonable attempt at refinement and not justified.

It seems to me that the suggested report is as far as we should go at this time.

In those places where I have known of its being applied it has been well received by the Fire Departments and they consider the idea good.

Following is the report of the Committee on Hydrant Markings of the New England Water Works Association:

Report of Committee on Hydrant Markings

To the New England Water Works Association:

Your committee on the Standard Markings of Fire Hydrants submitted the following report:

This subject is of importance to all water utilities and Fire Departments.

If every hydrant in a water works is tested to learn the amount of water it will deliver at a given residual pressure and the hydrant is marked to show the result, the Fire Department will be able to work to better advantage and the Water Works officers will have valuable records.

If the system of marking is uniform, Fire Departments from other towns will be able in time of emergency to locate at the proper hydrants.

It is desirable that the capacity of all hydrants be determined at the same residual pressure and that the full capacity when supplying pumpers be known.

For this reason a residual pressure of 10 pounds has been adopted for the standard.

Markings

Markings should be determined by flow test, and should be divided into 3 classes, A, B, and C.

Class A. Hydrants which have sufficient capacity to supply 1,000 or more gallons per minute.

Class B. Hydrants which have sufficient capacity to supply not less than 500 gallons per minute.

Class C. Hydrants with insufficient capacity to supply 500 gallons per minute.

Post Hydrant Markings

Barrels of all hydrants should be chrome yellow for visibility.

Class A. Tops and nozzle caps should be green.

When the capacity of the hydrant is greater than 2,000 gallons per minute, a number should be painted on the barrel of the hydrant signifying the number of thousand gallons per minute exceeded.

Class B. Tops and nozzle caps yellow.

Class C. Tops and nozzle caps red.

The colorings conform to standard traffic signals with green the most desirable, and red the least desirable.

Flush Hydrant Colorings

All location markers for flush hydrants should carry upon their background, the colors designating the class in which that particular hydrant falls.

All flush hydrant covers should carry upon the under side, preferably within the circle, the proper color as a background upon which any necessary data could be stencilled in black.

Respectfully submitted,

HARRY U. FULLER,
GEORGE H. FINNERAN,
FRANK E. WATERMAN.

(Presented before the March meeting of the New England Water Works Association at Boston.)

Fire College to Be Held in Indiana

A fire college is to be held at Purdue University on April 13, under the joint auspices of the University, State Fire Marshal's office, the Indiana Fire Chiefs' Association, the Indiana Firemen's Association, the Northern Indiana Industrial and Volunteer Firemen's Association and the Indiana Section, American Water Works Association. The sessions will be held in the Memorial Union Building of the University.

The program is as follows:

9:30 a.m.—Decreasing Our National Fire Losses Through Fire Prevention. Richard E. Vernor, Western Actuarial Bureau, Chicago. Discussion: Joseph Scherer, Chief Inspector, State Fire Marshal's Office. Bernard A. Lynch, Chief Division of Fire Prevention, Indianapolis. Frank H. Miller, Chairman, Fire Prevention Committee, Indiana Firemen's Association.

10:20 a.m.—Fighting Fires in Advance Through Systematic Inspection. Harry E. Voshell, Fire Chief, Indianapolis. Discussion: Clarence Goldsmith, Assistant Chief Engineer, National Board of Fire Underwriters.

11 a.m.—Control of Arson. E. L. Donovan, Special Agent, Committee on Incendiarism and Arson, National Board of Fire Underwriters. Discussion: Clem Smith, Indiana State Fire Marshal.

11:35 a.m.—The Value of a Well Operated Automatic Sprinkler System. John R. Hamilton, Automatic Sprinkler Corporation of America, Cleveland.

12:15 p.m.—Luncheon—Memorial Union Building. Election of Officers and Committee Reports.

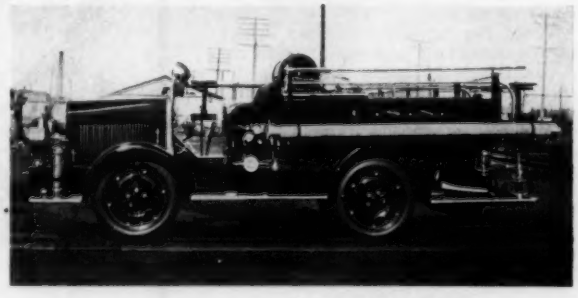
1:10 p.m.—The Value of An Adequate Supply of Water for Fire Fighting. Malcolm Pirnie, President, American Water Works Association, New York City.

1:40 p.m.—A State Fire College—Its Value and Method of Operation. Clarence Goldsmith, Assistant Chief Engineer, National Board of Fire Underwriters. Discussion: Al G. Feeney, Director of Safety, State of Indiana. W. M Claiborne, President, Indiana Fire Chiefs Association, Logansport. Wm. Steinmetz, President, Indiana Firemen's Association, Evansville. W. A. Knapp, Professor in Charge Engineering Extension Department, Purdue University. Harry E. Voshell, Fire Chief, Indianapolis.

2:40 p.m.—Effective Utilization of the Public Water Supply in Fire Fighting. W. C. Mabee, Chief Engineer, Indianapolis Water Company.

3:05 p.m.—The Importance of a Volunteer Fire Department. Clem Smith, State Fire Marshal. Discussion: T. J. Yoos, President, Northern Indiana Industrial and Volunteer Firemen's Association. L. W. Brown, Fire Chief, Rockville, Ind.

4:00 p.m.—Demonstrations, Fire Drills, etc. J. J. O'Brine, Drill Master, Indianapolis Fire Department.



Fire Apparatus Designed to Run on Railroad Rails

A Pirsch 500-gallon type pumper has been constructed for the U. S. Navy station at Oahu, Hawaiian Islands. It will be placed in service at the U. S. Navy Ammunition depot, and as there are no roads over which a motor vehicle can travel in that territory, the apparatus was designed for rail work.

FALSE ALARMS

A MISFIT

He was detailed to be present at the annual college dance in accordance with a local regulation concerning fire prevention regulations in places of public assembly. All the guests were present in formal evening clothes, and therefore his blue coat and silver buttons were very conspicuous. A guest who was slightly the worse for liquid refreshment came over to him.

He asked, "Do you smoke?"

"No," answered the fireman.

"Do you drink?"

"No."

"Do you eat hay, then?"

"Of course not."

"Gee! You're not a fit companion for man or beast."

When we told our doctor we'd pay him in a few weeks, he snapped, "What do you think I'm in business for—your health?"

WRONG ARCH

The annual memorial services were held this year in the First Presbyterian Church. A large representation of the department was present.

When it came time to make the church announcements, the minister said:

"The collection this morning will be taken on behalf of the arch fund, and not, as erroneously reported in the newspaper, on behalf of the arch-fiend."

It may be destiny that shapes our ends, but many a comely miss has found that those electric reducing machines help.

MODERN YOUTH

In return for services at a spring theatre inspection, the manager invited the Captain to join a special party to which some of the manager's friends were invited. Following the first act, a number of the group went to the smoking room.

With the carefree manner which comes from long association with the department, the guest took out his cigarettes and remarked to a young lady:

"Do you smoke cigarettes?"

"Sure," she replied, "what do you do with them?"

We've often wondered why money is called dough, for, at least, dough sticks to the fingers.

DOUBLE CHECK

The boys had contributed towards the erection of a hunting lodge in the mountains, where those with time off could come during the hunting season. It proved to be a popular place. It was also the cause of many incredulous stories.

At an informal gathering, one said:

"When I was up in the hills, I saw a mountain lion come right up to the lodge. It was a fierce beast, but I, with great presence of mind, threw a bucket of water in its face and it slunk away."

There was silence for a moment.

Another remarked in a matter-of-fact voice:

"I can vouch for the truth of that story. A few minutes after that happened, I was coming by that hill. I met this lion, and as is my habit, stopped to stroke its whiskers. Boys, those whiskers were wet."

FORTUNATE FACE

The morning duties were all attended to, and the man at the desk found time to watch the people as they passed by the open door of the station. Along came a little boy, his face decorated with large chocolate smears. The desk man saw him and as a matter of conversation, the boy paused at the open door and remarked:

"My sister is awfully lucky."

"Why?" asked the desk man, very much interested.

"She went to a party last night where they played a game in which the fellows either had to kiss a girl or pay a forfeit. And the forfeit was a box of candy."

"Well, how was your sister lucky?"

"She came home with thirteen boxes of candy."

NO STIGMA

Johnson was a colored hero, and in common with most men of such high calibre, suffered through to the end. When a blaze broke out during a colored church social, Johnson helped carry out the valuables. He received an infection and several days later was in bed with a high fever. The colored preacher called at about the same time the doctor did, and chatted a while with him. When the physician left, the reverend turned to the wife and very impressively said:

"Mrs. Johnson, we has knocked the fever out of him."

"Sho' nuff," she exclaimed after an examination. "Am he gwine to get well, den?"

"No'm. Dey is no hope fo' him, but yo' has de satisfaction of knowin' he died cured."

—Drawing by "Art" Espey

"Ya know, Cap'n, this playpipe reminds me of the old lady. When there's work ta be did—allus sputterin', meanern tripe to handle, and danged tough to shut up."

FREE INFORMATION

JUST run down the list of equipment and jot down on the coupon below the numbers that indicate the equipment in which you are interested. Then fill out rest of the coupon and mail it to us.

We will then request the leading manufacturers of such equipment to send you descriptive literature and prices direct without any cost to you or obligation whatever.

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11 Badges, Insignias, Buttons, etc.
12 Banners, Trumpets, etc.
13 Battery Jars
14 Battery Zincs for Fire Alarm Batteries
15 Bells, Fire Alarm, Municipal
16 Body Equipments
17 Boxes, Gongs, Reels, Registers, Fire Alarm
18 Brakes, Air
19 Brake Linings
20 Brooms, Fire
21 Building Materials, Fire Retardant
22 Caps, Firemen's
23 Chains, Non-Skid, Fire Apparatus
24 Chassis for Fire Apparatus
25 Chemical Engines and Tanks
26 Chimney Fire Fuses and Compounds
27 City Service Trucks
28 Coats and Suits, Firemen's Quick Hitch
29 Combination Chemical and Hose Cars
30 Cutting and Welding Equipment, Blow Torch
31 Cutting and Welding Equipment, Electric
32 Deluge Sets
33 Door Openers, Fire Station, Automatic
34 Electric Light Plants
35 Extinguishers, Calcium Chloride
36 Extinguishers, Carbon Dioxide
37 Extinguishers, Soda-Acid
38 Extinguishers, Carbon Tetrachloride
39 Extinguishers, Foam
40 Extinguishers, Powder
41 Fire Boat Nozzle Equipment
42 Fire Department Supplies, General
43 Fire Exit Devices, Door Opening
44 Fire Alarm Posts
45 Fire Escapes, Portable
46 Fire Escapes, Rigid
47 First Aid Equipment
48 Flare Lights
49 Flashlights, Hand
50 Flood Lighting Equipment
51 Foam Generating Apparatus
52 Foam Liquid for Extinguishers
53 Gas Masks and Respirators
54 Gas and Smoke Helmets
55 Gas and Smoke Generators
56 Goggles, Firemen's
57 Helmets, Metal, etc.
58 Hose Bridges
59 Hose Carts, Reels and Racks
60 Hose Clamps
61 Hose, Fire
62 Hose, Chemical
63 Hose Holders
64 Hose Jackets
65 Hose Standardization Tools
66 Hydrant Draining Pumps
67 Hydrants, Fire
68 Jacks for Fire Trucks
69 Jacks, Shoring and Prying
70 Ladders, Fire
71 Lightning Arresters
72 Motorcycles, Fire Dept. Equipped
73 Nets, Life
74 Nozzles, Pipes and Miscellaneous Brass Goods
75 Packings, Pump
76 Pads, Pole Hole
77 Paints, Fire Resisting
78 Priming Ether, Motor
79 Pumping Cars, Standard
80 Pumping Cars, Foam
81 Pumps, Fire Apparatus
82 Pumps, Fire Service, Stationary
83 Pumps, Portable for Fire Protection
84 Record Books, Fire
85 Relief Valves
86 Reviving Apparatus, Oxygen
87 Rubber Clothing
88 Salvage Covers
89 Searchlights
90 Shingles, Fire Retardant
91 Shirts, Firemen's Special
92 Sirens, Apparatus and Chiefs' Cars
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96 Squad and other Auxiliary Cars
97 Sprinkler Head Shut-Offs
98 Sprinkler Supervisory Service
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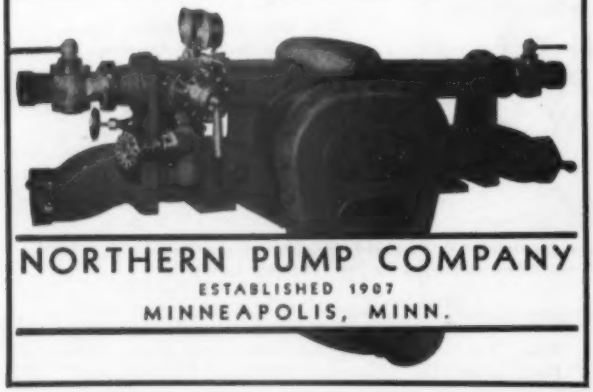

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